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The EDISON ELECTRIC INSTITUTE BULLETIN

April
1955

Published Monthly by Edison Electric Institute

EEI Convention Program

Sales Conference Summary

Engineering Opportunities in the Electric Utility Industry

Harold Quinton

Are Public Power Programs in the Public Interest?

Alexander M. Beebee

Adequate Wiring Program

John W. Evers

Street Tree and Utility Conference

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

December, 1953-1954

SOURCE AND DISPOSAL OF ENERGY—MONTH OF DECEMBER

	1954	1953	%
NET GENERATION* (Kwhrs in Thousands)			
By Fuel Burning Plants	34,378,738	30,404,151	+13.1
By Water Power Plants	9,048,009	8,679,081	+ 4.3
Total Generation	**43,426,747**	**39,083,232**	**+11.1**
Add—Net Imports Over International Boundaries	280,130	67,583	.....
Less—Company Use	124,311	131,064	− 5.2
Less—Energy Used by Producer	685,254	695,955	− 1.5
Net Energy for Distribution	**42,897,312**	**38,323,796**	**+11.9**
Lost and Unaccounted for	5,804,794	5,284,117	+ 9.9
Sales to Ultimate Customers	**37,092,518**	**33,039,679**	**+12.3**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of December 31			
Residential or Domestic	43,139,998	41,981,633	+ 2.8
Rural (Distinct Rural Rates)	1,637,535	1,621,810	+ 1.0
Commercial or Industrial:			
Small Light and Power	5,992,814	5,863,210	+ 2.2
Large Light and Power	279,591	271,947	+ 2.8
Other Customers	164,621	160,465	+ 2.6
Total Ultimate Customers	**51,214,559**	**49,899,065**	**+ 2.6**
KILOWATTHOUR SALES—During Month of December (Kwhrs in Thousands)			
Residential or Domestic	10,202,550	9,109,684	+12.0
Rural (Distinct Rural Rates)	637,450	583,410	+ 9.3
Commercial or Industrial:			
Small Light and Power	6,397,404	5,921,432	+ 8.0
Large Light and Power	18,131,269	15,764,525	+15.0
Street and Highway Lighting	416,669	394,401	+ 5.6
Other Public Authorities	820,132	778,426	+ 5.4
Railways and Railroads:			
Street and Interurban Railways	247,233	255,600	− 3.3
Electrified Railroads	193,262	189,001	+ 2.3
Interdepartmental	46,549	43,200	+ 7.8
Total to Ultimate Customers	**37,092,518**	**33,039,679**	**+12.3**
Revenue from Ultimate Customers (Thousands)	**$644,528**	**$589,705**	**+ 9.3**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended December 31, 1954			
Kilowatthours per Customer	2,549	2,346	+ 8.7
Average Annual Bill	$68.57	$64.28	+ 6.7
Revenue per Kilowatthour	2.69¢	2.74¢	− 1.8

* By Courtesy of the Federal Power Commission.

THE EDISON ELECTRIC INSTITUTE BULLETIN is published monthly by the Edison Electric Institute, an association of electric light and power companies in the United States and its territorial possessions. Its affiliate members consist of members of the Canadian Electrical Association.

The objectives of the Edison Electric Institute are:

The advancement in the public service of the art of producing, transmitting, and distributing electricity and the promotion of scientific research in such field.

The ascertainment and making available to the members and the public of factual information, data, and statistics relating to the electric industry.

To aid its operating company members to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, giving due regard to the interests of consumer, investor, and employee.

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Closing date for the BULLETIN is the tenth of the month preceding the month of issue.

Manuscripts and correspondence relating to the BULLETIN should be addressed to the Editor, Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y.

The Edison Electric Institute does not assume responsibility for, nor necessarily endorse or approve, statements made by contributors to the BULLETIN.

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Subscription price of the BULLETIN is $2.00 per year in the United States; $3.00 per year in foreign countries.

Entered as second-class matter, August 17, 1933, at the post office at Philadelphia 2, Pa., under the act of March 3, 1879. Publication office, 56th and Chestnut Sts., Philadelphia 39, Pa. Editorial office, 420 Lexington Ave., New York 17, N. Y. Volume 23, No. 4, 1955.

The EDISON ELECTRIC INSTITUTE BULLETIN

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CONVENTIONS AND MEETINGS

1955

MAY

2- 3 IES Midwestern Regional Meeting, Edgewater Beach Hotel, Chicago, Ill.
3- 4 EEI Transmission and Distribution Committee Meeting, Statler Hotel, Detroit, Mich.
4- 6 AIEE Middle Eastern District Meeting, Deshler Hilton Hotel, Columbus, Ohio.
5 NAEC Annual Meeting, Mayflower Hotel, Washington, D. C.
5- 6 PEA Transmission and Distribution Committee, Irem Temple Country Club, Dallas, Pa.
5- 6 South Dakota All-Electrical Industry Conference, Marvin-Hughitt Hotel, Huron, S. D.
5- 6 Wisconsin Utilities Association Home Service Conference, Edgewater Hotel, Madison, Wis.
5- 7 PEA Hydraulic Power Committee, Hotel Sheraton-Brock, Niagara Falls, Ontario.
8-11 EEI Purchasing and Stores Annual Spring Meeting, Dinkler-Tutwiler Hotel, Birmingham, Ala.
9-10 EEI Prime Movers Committee, Biltmore Hotel, Los Angeles, Calif.
9-10 EEI Accident Prevention Committee, Pfister Hotel, Milwaukee, Wis.
9-11 Northwest Electric Light and Power Association, Business Development Section, Hotel Utah, Salt Lake City, Utah.
10 ECAP Copy Group, Hotel Sheraton, Chicago, Ill.
10 EEI Commercial Electric Cooking Conference, Sheraton Hotel, Chicago, Ill.
11-13 Pacific Coast Electrical Association Annual Convention, Palace Hotel, San Francisco, Calif.
12-13 PEA Systems Operation Committee, Skytop Lodge, Skytop, Pa.
16-17 EEI Electrical Equipment Committee, Rice Hotel, Houston, Texas.
16-17 PEA System Planning Committee Spring Meeting, Castleton Hotel, New Castle, Pa.
16-20 National Fire Protection Association, 59th Annual Meeting, Netherland Plaza Hotel, Cincinnati, Ohio.
19 EEI Financing and Investor Relations Committee, Vanderbilt Room No. 8, Hotel Roosevelt, New York, N. Y.
19-20 IES East Central Regional Conference, Abraham Lincoln Hotel, Reading, Pa.
19-20 PEA Industrial Sales Conference, Bedford Springs Hotel, Bedford, Pa.
19-20 EEI Industrial Relations Committee jointly with Personnel Administrative Section, Southeastern Electric Exchange, Netherlands Plaza, Cincinnati, Ohio.
19-20 EEI Dealer Coordination Workshop, Webster Hall Hotel, Pittsburgh, Pa.
19-20 PEA Electrical Equipment Committee Meeting, Hotel Roosevelt, Pittsburgh, Pa.
22-25 National Association of Electrical Distributors 47th Annual Convention, The Conrad Hilton Hotel, Chicago, Ill.
23-24 PEA Annual Accounting Conference, William Penn Hotel, Pittsburgh, Pa.
26-27 EEI Sales Personnel and Training Committee, EEI Headquarters, New York, N. Y.
26-27 PEA Relay Committee Spring Meeting, Abraham Lincoln Hotel, Reading, Pa.
27-28 North Central Electrical Association, Accounting Committee, Fergus Falls, Minn.

JUNE

5- 7 Controllers Institute of America, Midwestern Conference, Radisson Hotel, Minneapolis, Minn.
5-10 ASME Oil and Gas Power Conference, Statler Hotel, Washington, D. C.

1955

10-11 IES Northeastern Regional Conference, Fort William Henry Hotel, Lake George, N. Y.
12 ECAP Management Group, Statler Hotel, Los Angeles, Calif.
13-16 EEI ANNUAL CONVENTION, Los Angeles, Calif.
20-23 ASME Semi-Annual Meeting, Statler Hotel, Boston, Mass.
20-24 American Society for Engineers Education Annual Meeting, Penn State University, State College, Pa.
22-24 Northwest Electric Light & Power Association Accounting and Business Practice Section, Vancouver Hotel, Vancouver, B. C.
26-28 Wisconsin Utilities Association Accounting Section, Dell View Hotel, Lake Delton, Wis.
26-29 Michigan Electric Association Annual Convention, Grand Hotel, Mackinac Island, Mich.
26-July 1 58th Annual Meeting, American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J.
27-29 CEA Annual Convention, Hotel Vancouver, Vancouver, B. C.
27-July 1 AIEE Summer General Meeting, New Ocean House, Swampscott, Mass.

JULY

8 NARUC Executive Committee Meeting, LaSalle Hotel, Chicago, Ill.

AUGUST

11-12 Southeastern Electric Exchange, Personnel Administration Section, Roanoke Hotel, Roanoke, Va.
15-19 AIEE Pacific General Meeting, Butte, Mont.

SEPTEMBER

11-14 Rocky Mount Electrical League Annual Fall Convention, Grand Teton Lodge, Jackson Hole, Wyo.
12-16 IES National Technical Conference, Cleveland, Ohio.
13-14 EEI-AGA Accounting Division Organizational Meetings, Netherland Plaza Hotel, Cincinnati, Ohio.
19-21 EEI Industrial Relations Round Table Conference, Drake Hotel, Chicago, Ill.
22-23 Southeastern Electric Exchange Engineering and Operation Section Meeting, Charlotte Hotel, Charlotte, N. C.
22-23 EEI Industrial Power and Heating Group, EEI Headquarters, New York, N. Y.

OCTOBER

3- 7 AIEE Fall General Meeting, Morrison Hotel, Chicago, Ill.
3- 5 EEI Meter and Service Committee, Hotel Syracuse, Syracuse, N. Y.
3- 5 EEI Prime Movers Committee, Hotel Cleveland, Cleveland, Ohio.
17-19 Joint Meeting AGA 37th Annual Convention and Pacific Coast Gas Association 62nd Annual Convention, Statler, Ambassador and Biltmore Hotels, Los Angeles, Calif.
17-18 EEI Electrical Equipment Committee, Shoreham Hotel, Washington, D. C.
20-21 Southeastern Electric Exchange Accounting Conference, Hotel San Carlos, Pensacola, Fla.
24-27 NARUC 67th Annual Convention, Grove Park Inn, Asheville, N. C.
27-28 Southeastern Electric Exchange Sales Conference, Biltmore Hotel, Atlanta, Ga.

The EDISON ELECTRIC INSTITUTE
BULLETIN

The EEI Convention at Los Angeles

Balanced, Inspiring Program to Cover Many Aspects of Industry's Responsibilities and Growth

WHEN the electric industry meets at the Institute's 23rd Annual Convention this year, it will do so at a unique point in its history. The record of achievement already accomplished has brought public confidence in the nation's electric companies to a level never before equalled; and the prospects for new growth and new responsibilities, through atomic energy and other developments, have never seemed greater or more exciting, even to an industry long accustomed to dealing with the future.

Both the program and the site of the Convention, to be held June 13-16, reflect this stimulating sense of progress. In booming, energetic Los Angeles, representatives of the industry will have an opportunity to gain a new perspective and to revitalize their thinking on basic matters concerning the future of their industry and their companies.

A distinguished group of speakers, each eminent in his field, will present their views on developments of particular importance at this time, including various phases of atomic policy and technology, regulation, relations with the public and with government, load-building, and advances in high-voltage transmission and high-pressure steam generation.

A most important product of the Convention experience is the insight it offers into the nature and magnitude of the responsibilities being borne by electric company executives today, and how these increasing responsibilities may be met in the future. For this reason, it is hoped that the meeting will be attended not only by the key executives of the present but by the largest possible number of potential leaders to whom leading responsibility will pass tomorrow. This year, Western

HAROLD QUINTON
President,
Edison Electric Institute

companies particularly have an unusual opportunity to be represented by promising operating-level personnel.

Of the Convention and its relationship to the contemporary scene, Institute President Harold Quinton has said: "Today we are faced with a future which requires increased emphasis on service of all kinds to our customers, the need for inspired and inspiring leadership, and the constant contribution of our industry to every phase of the nation's life—its industry, its economy and its freedom. We do not labor for ourselves alone. Our contribution to the nation gives hope and assurance to more people than we realize. These considerations, and others, have been well and interestingly covered in the arrangements made by our able Convention Program Committee under Chairman Sherman Knapp."

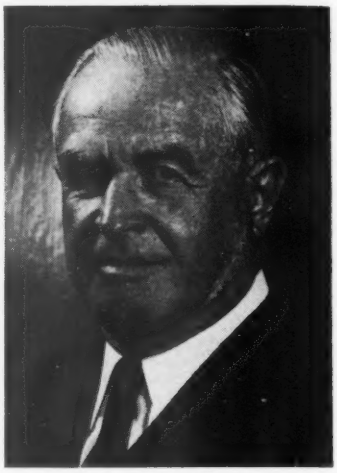
Speakers at the first three sessions will include R. G. Rincliffe, President, Philadelphia Electric Co.; James B. Black, President, Pacific Gas and Electric Co.; Richard Joyce Smith, Partner, Whitman, Ransom & Coulson; Kinsey M. Robinson, Chairman of the Board and President, The Washington Water Power Co.; C. A. Tatum, Jr., President and General Manager, Dallas Power & Light Co.; Harry Restofski, Vice President, West Penn Power Co., and Chairman of the EEI Prize Awards Committee; H. C. McClellan, President, Old Colony Paint & Chemical Co., and Chairman, National Association of Manufacturers, and Elmer L. Lindseth, President, The Cleveland Electric Illuminating Co.

During the final two sessions, speakers scheduled include Dr. Lawrence R. Hafstad, Director, Atomic Energy Division, The Chase Manhattan Bank, New York; Philip A. Fleger, Chairman of the Board, Duquesne Light Co.; Edgar H. Dixon, President, Middle South Utilities, Inc., and Chairman, EEI Committee on Atomic Energy; J. Carlton Ward, Jr., President, Vitro Corporation of America; Louis V. Sutton, President and General Manager, Carolina Power & Light Co.; Philip Sporn, President, American Gas and Electric Service Corp., and Dr. George C. S. Benson, President, Claremont Men's College, Claremont, Calif., and Research Director, Commission on Intergovernmental Relations.

All five of the Convention's general sessions will be held in the Philharmonic Auditorium, located across from Pershing Square in the heart of the business section of Los Angeles. Institute President Harold Quinton will preside at the first general session, which will begin at 2:30 p.m. on Monday, as well as at the third general

HON. GOODWIN J. KNIGHT
Governor of California

R. G. RINCLIFFE
President, Philadelphia Electric Co.



JAMES B. BLACK
President, Pacific Gas and Electric Co.

session on Tuesday afternoon and the fifth general session on Wednesday afternoon. Presiding at the second and fourth general sessions, to be held on Tuesday and Wednesday mornings respectively, will be Harllee Branch, Jr., Vice President of the Institute.

First General Session

Opening the first general session, on Tuesday afternoon, will be a welcome by the Hon. Goodwin J. Knight, Governor of California. In his opening address, President Quinton's remarks will point up that expanding electricity requirements, as well as continued new developments in fields related to power production, challenge the industry not only to maintain its remarkable record of achievements but to set new standards. He also will call for a continuance of the industry's struggle for wise and just laws, and will remind the industry that its efforts will be strengthened by the clear understanding that it fights not only for this generation but for the future generation of Americans, those who would experience the full consequences of the failure to stem the tide that would destroy economic freedom in this land.

R. G. Rincliffe, President of Philadelphia Electric Co., will be the concluding speaker of the first session. In his speech entitled "Super-Critical Pressure—An Essential Forward Step in Power Generation," Mr. Rincliffe will discuss how, with demand for electricity ever-increasing and with fuel reserves declining, the real need for more efficient generation standards is made clear. The speaker will present a brief historical review of power generation growth, improvements, and problems which have been solved, and will highlight the discussion of the development of supercritical pressures with a description of Philadelphia Electric's new supercritical station.

RICHARD JOYCE SMITH
Partner, Whitman, Ransom & Coulson

Second General Session

At the second general session, on Tuesday morning, two of the three speakers will speak on subjects of national interest but with particular reference to the West, site of this year's convention. A reappraisal of regulation, which applies to companies throughout the nation, will be discussed by the other speaker.

The first speaker of the session, James B. Black, President of Pacific Gas and Electric Co., will deliver an address entitled "Far Western Growth Makes Utility History." Since World War II, the tide of migration to the West has become the greatest mass movement of population the nation has ever known. Mr. Black will review how, by expanding their facilities on a scale without precedent, the utility companies of California, Arizona, and Nevada have taken this growth in their stride. He believes that from a long tradition of pioneering, they look confidently toward ever-broadening horizons. Since partnership with government, both local and national, for water resource development is a practice already well established by these companies, Mr. Black foresees further partnership activity

KINSEY M. ROBINSON
Chairman of the Board and President The Washington Water Power Co.

About the Speakers:

Dr. George C. S. Benson, President of Claremont Men's College, Claremont, Cal., combines the dual experience of government administrator and educator. As director of research for the U. S. Commission on Intergovernmental Relations, Dr. Benson has participated since 1954 in the study of better ways to divide the functions of local, state, and Federal government. For the Federal government, he has served as director of personnel and director of the administrative division, Office of Price Administration, and consultant to the Bureau of the Budget, Civil Service Commission, and Department of Agriculture. In 1949, for the Office of Military Government, he went to Germany as visiting expert for the Undersecretary of War to consult on the development of self-government in the Reich. He has taught at Harvard University, from which he received his MA and PhD degrees; University of Chicago, University of Michigan, and Northwestern University.

James B. Black, President of Pacific Gas and Electric Co., is a 43-year veteran of the utility industry. He serves on the boards of directors and executive committees of PG and E, Southern Pacific Co., and Fireman's Fund Insurance Co., and on the boards of United States Steel Corp., Equitable Life Assurance Society of the U. S., Shell Oil Co., Chemical Corn Exchange Bank, Del Monte Properties Co., and California Pacific Title Insurance Co. For the EEI, he is a member of its Advisory Committee. Following his graduation from California School of Manual Arts and University of California, he joined Great Western Power Co. as a service inspector. Six years later he became general sales manager, and a year later, at age 33, became vice president and general manager. Western Power Corp., of which Great Western was a subsidiary, named him vice president in 1926, and The North American Co., parent firm of the group, elevated him to a vice presidency in 1927. He became PG and E's president in 1935.

Edgar H. Dixon is President and Director of Middle South Utilities, which with The Southern Co. is building a large steam electric generating station at West Memphis, Tenn., to provide power for the Atomic Energy Commission. He also serves as vice president and director of Electric Energy, Inc., a company with generating facilities at Joppa, Ill., that furnishes electric power to the AEC plant at Paducah, Ky. Mr. Dixon began his business career with Electric Bond and Share Co. He was elected secretary and treasurer of Electric Power & Light Corp. in 1935, and president of that corporation in 1944. He became president of Middle South Utilities, Inc. when it was formed in 1949. Mr. Dixon is also a director of Arkansas Power & Light Co., Louisiana Power & Light Co., Mississippi Power & Light Co., and New Orleans Public Service Co., Inc. He is chairman of the EEI's Committee on Atomic Power, and is a member of its Advisory and Tax Policy Committees.

Philip A. Fleger, Chairman of the Board and chief executive officer of Duquesne Light Co. since 1950, has served the electric utility industry for the past 29 years. Following graduation from the University of West Virginia Law School, he joined the Philadelphia Co. System in Pittsburgh, of which Duquesne Light was a part, as a law clerk. Prior to the assumption of his present duties, he filled the positions of assistant general attorney, general attorney, vice president, senior vice president, executive vice president, and president. Mr. Fleger is a member of both the EEI's Advisory Board, and the Committee on Atomic Energy, the advisory board of the Mellon National Bank and Trust Co., and board of directors of the Western Pennsylvania Hospital and holds memberships in PEA and the Allegheny County, Pennsylvania, and American Bar Associations.

Dr. Lawrence R. Hafstad, who joined the staff of The Chase Manhattan Bank this year as director of its Atomic Energy Division, is a prominent physicist and leading atomic energy scientist. Prior to this appointment, he was the first director of the Reactor Development Division of the Atomic Energy Division, a post he held from 1949 through 1954. A graduate of the University of Minnesota and Johns Hopkins, he was a physicist for the Carnegie Institution of Washington from 1927 to 1945 and later served as director of research of the Applied Physics Laboratory of Johns Hopkins University. In 1947 he was named executive secretary of the Research and Development Board, Office of the Secretary of Defense. It was under his guidance with the AEC that the nation's first electrical power was produced from nuclear fuel at the National Reactor Testing Station. Dr. Hafstad is one of two men to receive the AEC's Distinguished Service Award.

Goodwin J. Knight was elected in 1954 as the 31st Governor of California. During his seven years as Lieutenant Governor of the state, he served a total of 420 days as its Acting Governor. Earlier, he served for 12 years as Superior Court Judge in Los Angeles County. He has been a practicing attorney, a hard-rock miner, and a man active in the civic affairs of his community and state. He is a graduate of Stanford University and studied at Cornell University as recipient of the Telluride Scholarship before he was admitted to the California Bar in 1921. Intermittently throughout his career he has been engaged in private law practice. Gov. Knight has a record of tremendous popularity with both parties. In the 1954 primary election for Governor, his plurality established new records for volumes of votes in California gubernatorial primaries.

Elmer L. Lindseth, President, The Cleveland Electric Illuminating Co., began his career with that company in 1924 as a test helper. Successively he became production engineer, assistant to the president, and vice president. He was made president in 1945. His college degrees include an AB from Miami (Ohio) University, a BS in mechanical engineering from Case School of Applied Science, a MS from Yale University, and an honorary Doctor of Science from Case. Mr. Lindseth, who served as president of the EEI during 1949-1950, is a member of its Advisory Committee. He is also a director of The National City Bank of Cleveland, and a trustee of the National Committee for Economic Development, Cleveland Community Fund, and Case Institute of Technology. In addition, Mr. Lindseth holds membership in ASME and the Cleveland Engineering Society.

Harold C. McClellan, Chairman of the Board of the National Association of Manufacturers, who served as NAM president in 1954, is president of the Old Colony Paint and Chemical Co., Los Angeles. The company, a small but flourishing enterprise employing 150 persons, began as a little paint plant with four employees which Mr. McClellan bought for $10,000 in 1927. After graduating from Occidental College in 1922, Mr. McClellan went to work for the Crescent Creamery Co., Los Angeles, where he worked until he entered business for himself. He has since brought his company up from a $900-a-month gross to a total of between $2,000,000 and $3,000,000 annual sales. In addition to his many positions with NAM, he has served as industry member of the War Labor Board and War Stabilization Board, is a former president of the Merchants and Manufacturers Association of Los Angeles and is president of the board of trustees of Occidental College.

About the Speakers:

Harry Restofski, Vice President of West Penn Power Co., joined the company in 1914 following graduation from Ohio Northern University. Prior to being named to his present position as executive in charge of rates, sales, advertising, and public relations, Mr. Restofski served as general safety director, assistant to the president, training director, personnel director, sales promotion manager, and general sales manager. He is chairman of the EEI Prize Awards Committee and is past chairman of the EEI Commercial Division General Committee and of the Better Light Better Sight Bureau. He holds membership in PEA, AEIC, IES, and the Electric League of Western Pennsylvania.

R. G. Rincliffe has been President of Philadelphia Electric Co. since 1952. He joined the utility in 1923 as an engineering assistant, and since has held a succession of positions including those of superintendent of gas manufacturing, purchasing agent, manager of electric generating stations, vice president in charge of electric operations, and executive vice president. He has been a director of the company since 1950. A graduate of Yale University and Massachusetts Institute of Technology, Mr. Rincliffe is a director and member of the Executive Committee of the EEI. He also holds membership in the Electrical Association of Philadelphia, AGA, Pennsylvania Gas Association, ASME, and AIEE. He is a director of the Philadelphia National Bank, the Pennsylvania Chamber of Commerce, and the United Fund of Philadelphia, and a member of the board of managers of the Franklin Institute of the State of Pennsylvania.

Kinsey M. Robinson, Chairman of the Board and President of The Washington Water Power Co., is also president of the recently formed Pacific Northwest Power Co., formed by four companies of that area to develop large hydro installations in the Pacific Northwest. Mr. Robinson began his career in 1911 with the Idaho-Oregon Light and Power Co. as inside wireman. The company was absorbed by Idaho Power Co. in 1916, and his first position with that company was as a manager of a local office. He rose through a succession of positions to the company presidency, which he resigned in 1938 to join his present company as its president. He is a past director of the EEI and is presently a member of its Advisory Committee. He is also a member of the board of the National Association of Electric Companies, a past director and a member of the Conservation Committee of the National Association of Manufacturers, and a director of the Association of Washington Industries.

Richard Joyce Smith is a partner in the law firm of Whitman, Ransom & Coulson, New York, and a director of The Connecticut Light and Power Co. He was formerly an associate professor of law at Yale University, where, for six years, he conducted courses and directed research in the law of public utility regulation. He is a graduate of The Catholic University of America, Yale University, and under a Social Science Research Council fellowship, spent a year investigating the regulation of public utilities in Great Britain and Ireland. For two years, Mr. Smith was a special counsel to the Interstate and Foreign Commerce Committee of the U. S. House of Representatives; later, for a similar period, he was chief counsel of the Special Committee of the U. S. Senate on Petroleum Resources. He is a member of the Connecticut State Board of Education, a past member of the Board of Pardons for the State of Connecticut, and is a trustee of the National Citizens Commission for the Public Schools.

Philip Sporn became President of American Gas and Electric Co. and all of its subsidiaries in 1947. He is a graduate of Columbia University's School of Engineering, and holds honorary degrees from Illinois Institute of Technology, Hanover College, Stevens Institute of Technology, and the University of Grenoble, France. Mr. Sporn joined AGE in 1920 and subsequently rose through the ranks to become chief engineer of the company and its subsidiaries in 1933. A member of the EEI Advisory Committee, he has served as a member of the Committee on Appraisal of Atomic Energy for the Association of Edison Illuminating Companies, as consultant on the Oak Ridge Nuclear Project for Monsanto Chemical Co., and as chairman of the *Ad Hoc* Advisory Committee on cooperation between the electric power industry and the AEC set up by the U. S. Atomic Energy Commission. He is president of the Ohio Valley Electric Corp., and is a member of the Electric Power Committee of the National Security Resources Board.

Louis V. Sutton, President and General Manager of Carolina Power & Light Co., is a past president of the Institute and a member of its board of directors. Following his graduation from Virginia Polytechnic Institute, Mr. Sutton worked for General Electric Co. before joining Carolina Power & Light in 1912 as a statistician. In rapid succession he held positions of increasing responsibility with that company, with Arkansas Central Power Co., and with Mississippi Power & Light Co., assuming his present duties in 1933. He is a director of the National Association of Manufacturers, director and past president of the Southeastern Electric Exchange; past director of the National Association of Electric Companies, and one of the organizers of the industry's Public Information Program.

C. A. Tatum, Jr. has been President and General Manager of Dallas Power & Light Co. since 1953. He is also vice president and a director of Texas Utilities Co. Mr. Tatum earned his BS degree in physics from Southern Methodist University prior to joining in 1928 Dallas Power & Light in its Commercial Department. He was named a vice president in 1950, and assistant to the president and a director of the company early in 1953. Active in civic work, Mr. Tatum is this year's president of the Community Chest of Dallas County and is Texas State Chairman of the Crusade for Freedom.

J. Carlton Ward, Jr., President of Vitro Corp. of America, has made his mark in several different phases of industry. Since his graduation from Cornell University, he has been associated in various capacities with International Paper Co., the U. S. Ordnance Dept., and Niles-Bement-Pond Co., and as a vice president or general manager with Hartford Machine Screw Co., General Cable Corp., Rome Co. Inc., and Pratt & Whitney Machine Division, United Aircraft Corp. He also served as president and chairman of the board of Fairchild Engine and Airplane Corp., and board chairman of Thompson Industries, Inc. Mr. Ward, an outstanding authority on aircraft engines, headed expeditions prior to World War II to France and Great Britain to advise them on engines and airplanes. At Fairchild, he led the Nuclear Energy for the Propulsion of Aircraft project. The corporation he now heads has a full cross-section of activity in the field of nuclear energy—from mining and processing of uranium through design of installations and reactors—for both industry and government.

C. A. TATUM, JR.
President and General Manager, Dallas Power & Light Co.

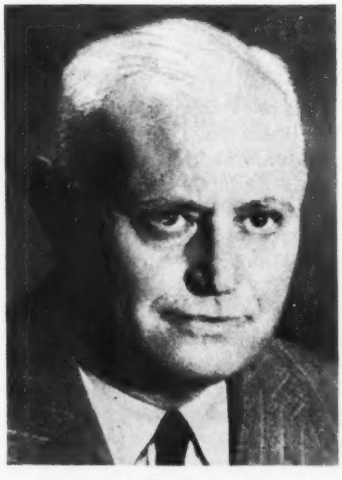
HARRY RESTOFSKI
Chairman, EEI Prize Awards Committee

H. C. MCCLELLAN
Chairman, National Association of Manufacturers

looming importantly for the immediate future.

Richard Joyce Smith, partner in the firm of Whitman, Ransom & Coulson, will speak on "Competing Agencies of Regulation — A Reappraisal." More than 25 years have elapsed since the so-called "Attleboro gap" in the regulation of electric utilities was defined by the United States Supreme Court. Mr. Smith will call attention to how, since that time, as part of a general trend toward centralized controls, the Federal government has been engaged in active regulation of electric utilities under the Federal Power Act and the Public Utility Holding Company Act of 1935. He feels that a span of a quarter of a century gives perspective for a reappraisal of the need for Federal regulation, and of the extent to which expanding Federal regulation may unnecessarily duplicate the functions of state agencies.

"Electric Utility Problems in the Pacific Northwest" will be discussed by Kinsey M. Robinson, Chairman of the Board and President of The Washington Water Power Co. Mr. Robinson feels that private utilities and other local groups in the Pacific Northwest are exploring every possibility to meet the tremendously increased need for electric power in that area. He will tell about four private utilities which, supported by four to one public opinion favoring the "partnership idea" rather than Federal domination of power development, have organized the Pacific Northwest Power Co. to contribute some two million kilowatts of installed capacity over and above present Federal construction, and to assure that the Northwest's power needs will be met on time and with private financing, thus saving the nation's taxpayers hundreds of millions of dollars.



ELMER L. LINDSETH
President, The Cleveland Electric Illuminating Co.

Third General Session

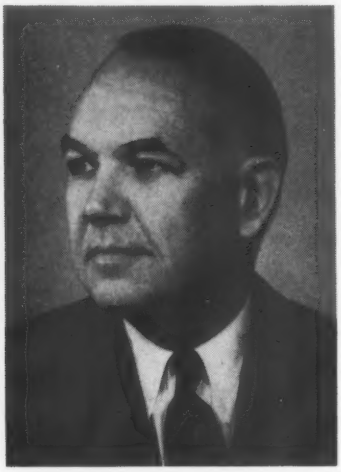
C. A. Tatum, Jr., President and General Manager, Dallas Power & Light Co., will be the first speaker at the third general session on Tuesday afternoon. He will speak on "Air Conditioning Is Big Business." Summer air conditioning is rapidly changing from a luxury to a general necessity in the Southwest and has become big business for both the manufacturer and the electric utilities, according to Mr. Tatum. His feeling is that customer acceptance is spreading beyond the so-called "hot areas," and may reach into areas previously assumed to have very little market.

Harry Restofski, Vice President of West Penn Power Co. and Chairman of the EEI Prize Awards Committee, will present the Claude L. Matthews Valor Award and the Reddy Kilowatt Annual Report Award at this session.

"Interdependence of Free Enterprise" will be the subject of a talk by H. C. McClellan, President of Old Colony Paint & Chemical Co. and Chairman of the National Association of Manufacturers. Mr. McClellan believes that free enterprise is the strong, essential thread which holds together the entire fabric of American freedoms, and that this cardinal principle has been obscured in the minds of many of our citizens over

DR. LAWRENCE R. HAFSTAD
Director, Atomic Energy Div., The Chase Manhattan Bank

PHILIP A. FLEGER
Chairman of the Board, Duquesne Light Co.



EDGAR H. DIXON
Chairman, EEI Committee on Atomic Energy

J. CARLTON WARD, JR.
President, Vitro Corp. of America

the past two decades by a constant drumfire of propaganda promoting alien ideologies, theories, and practices. He will stress that in this time of tension, it is more important than ever that Americans see with complete clarity that free enterprise made possible every economic and social benefit that they now enjoy.

Elmer L. Lindseth, President of The Cleveland Electric Illuminating Co., will report on "'Action' Program of the American Council to Improve Our Neighborhoods." Here is a program of vital importance to the electric utility industry and its $3 billion annual domestic business. "Action" is organized to deal with the problem of protecting America's $220 billion investment in housing by conserving and rehabilitating existing homes and neighborhoods and removing slum conditions. By alerting citizens to the nature of the housing problem and instructing them in methods of improving their local situation, economic and social benefits for the entire nation will be obtained. Mr. Lindseth is convinced that the electric industry has a vital stake in this effort.

Fourth General Session

The fourth general session on Wednesday morning will be devoted to atomic energy discussions. Dr. Lawrence R. Hafstad, Director of the Atomic Energy Division of The Chase Manhattan Bank, will be the first speaker of the session and will speak on "Atomic Energy and Electric Utilities." Electricity is becoming increasingly the ideal vehicle in the conversion of the primary sources of energy into the many usable forms required in the everyday life of a nation. As the world's appetite for energy multiplies, it is evident that the huge reserves of energy contained in uranium and thorium must be wisely utilized. Nuclear energy will find its most practical and profitable use in the production of electricity. Dr. Hafstad emphasizes that it is not too early, therefore, for the industry to take a serious interest in decisions currently being made which may govern its future.

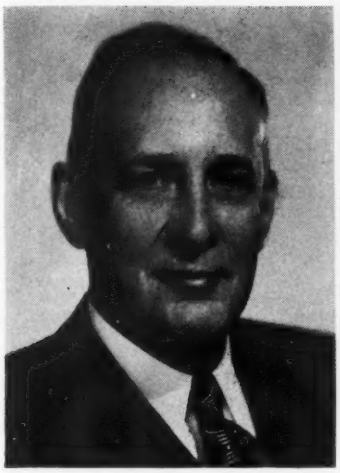
Philip Fleger, Chairman of the Board of Duquesne Light Co., will discuss "The Shippingport Atomic Power Plant." At Shippingport, Pa., the Atomic Energy Commission, Westinghouse Electric Corp., and Duquesne Light Co. are building America's first full-scale, nuclear-fueled power plant. Westinghouse is building the nuclear part, under contract with the AEC: Duquesne is building the turbine-generator portion and will operate the entire plant. The construction and operation of this plant should do much to advance the devlopment of peacetime atomic power.

"Industry's Response to Nuclear Power" will be the subject of a speech by Edgar H. Dixon, President of Middle South Utilities, Inc., and Chairman of the EEI Committee on Atomic Energy. Mr. Dixon believes that the electric industry's increasing participation in the development of atomic power for peacetime energy needs is an encouraging step toward the eventual achievement of competitive nuclear power. What the electric industry has done and may reasonably be expected to do in the future toward the realization of this goal, as well as nuclear power developments in other countries, will be discussed.

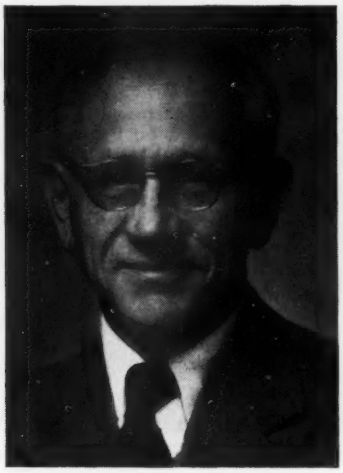
Concluding the session, J. Carlton Ward, Jr., President of Vitro Corp. of America, will speak on "The Economics of Feed Materials and Fuel Processing Problems." The greatest change in the economics of power production will be in the field of feed materials and fuel processes for nuclear reactors. Mr. Ward will consider the following questions in his speech: What are the elements and types of feed materials? And how are they mined, concentrated, and refined? What about the important factor of fuel preparation, the various processing problems—separation, storage, disposal—and the economic impact of secondary material? What of the future?

Fifth General Session

The final session on Thursday morning will open with a speech by Louis V. Sutton, President and General Manager of Carolina Power & Light Co., entitled "Our Record Will Win Public Support." According to Mr. Sutton, there is unmistakable evidence on the part of the American people that they are seeing through the political and socalistic attack on the electric industry's magnificent record of achievement. He feels that the large majority wish to support, rather than destroy, free enterprise effort to build even greater future progress on the accomplishments of the past, and that the industry's record justifies public support.



LOUIS V. SUTTON
President and General Manager, Carolina Power & Light Co.



PHILIP SPORN
President, American Gas and Electric Service Corp.

DR. GEORGE C. S. BENSON
President, Claremont Men's College

Philip Sporn, President of American Gas and Electric Service Corp., will review "Movement of Power" at this session. The need for a technique to move power efficiently and economically was recognized almost from the origination of the electric light and power industry by Edison in 1882. Mr. Sporn will review the impetus given to this basic art by Niagara and other early hydroelectric developments that has been followed up by the electric industry—manufacturers and utilities—in the succeeding seven decades, culminating in the development of 330,000 volts as a practical transmission voltage in 1953. Important auxiliary phases in the development of the art which will be discussed are the significant advances in the solution of the lightning, relaying and load frequency-control problems to which the utilities have contributed so much.

In the final Convention speech, Dr. George C. S. Benson, President of Claremont Men's College, Claremont, Calif., and Research Director for the Commission on Intergovernmental Relations, will turn attention to the question "Is the Federal Government Taking Over the States?" The trend toward increasing Federal control over state activities constitutes a problem which concerns every American, because it threatens the traditions of government which are basic to our democratic system, according to Dr. Benson. "What are the pros and cons of this drift?" and "What steps should be taken to alter its course?" will receive consideration in his address.

Delegates and guests are urged to register as soon as possible upon arrival in Los Angeles. Convention registration will begin on Sunday at 11:00 a.m. in the lobbies of the Biltmore and Statler Hotels. A registration fee of $15.00 will cover attendance at all business sessions and social functions, and will include members of the family accompanying the registrant. The registration schedule is as follows:

Sunday, June 12—11:00 a.m. to 5:00 p.m., lobbies of Biltmore and Statler Hotels.

Monday, June 13—8:00 a.m. to 2:00 p.m., lobbies of Biltmore and Statler Hotels; 12 noon to 5:00 p.m., lobby of Philharmonic Auditorium.

Tuesday, June 14 — 8:30 a.m. to 5:00 p.m., lobby of Philharmonic Auditorium.

Wednesday, June 15—8:30 a.m. to 12 noon, lobby of Philharmonic Auditorium.

Thursday, June 16—8:30 a.m. to 12 noon, lobby of Philharmonic Auditorium.

Convention badges for gentlemen and pins for ladies, obtainable only upon registration, will be required for admission to business sessions and social functions. For admission to social events, tickets, also obtained upon registration, will be required in addition to badges and pins.

Since a large attendance is expected at the Convention, it is advisable to make hotel reservations at an early date, to assure that desired accommodations can be obtained. If reservations have not yet been secured, immediate application, specifying exact time of arrival, should be made to P. A. Harrigan, Housing Bureau, Los Angeles Chamber of Commerce, 1151 South Broadway, Los Angeles, Calif.

Travel to the Convention will be by plane, train, and automobile from many different points of origin, and there will be a wide range in dates of departure and arrival. Because of these considerations, no plans for any special Convention trains or flights to or from Los Angeles have been made. Since the Convention is being held at the start of the summer tourist and vacation season, travel will be heavy. To help the transportation companies prepare for Convention traffic, and to assure desired accommodations and travel arrangements, it is advisable that travel plans and reservations be made early. All reservation inquiries should be directed to the appropriate railroad or airline passenger agent. Each of the transportation systems serving Los Angeles will be pleased to provide detailed information on fares, stop-over privileges, side trips and routing possibilities. A set of forms covering railroads and airlines serving Los Angeles is available from the Edison Electric Institute on request, to assist convention-goers in planning their trip.

Schedule of Recreation Events

Monday, June 13—

5:00 p.m. to 7:00 p.m.—President's Reception. Pacific and Sierra Rooms, Hotel Statler. Dancing to follow.

Tuesday, June 14—

2:00 p.m. to 5:00 p.m.—For the ladies, a trip through Universal

(*Continued on page* 111)

(Left to right) Harry Restofski, Chairman, EEI Prize Awards Committee, admires the George A. Hughes Awards accepted for their winning companies by J. J. Powell, Mississippi Power & Light Co.; E. H. Gardiner, Jr., Texas Power & Light Co.; J. H. Keele, Florida Power & Light Co.; George E. Sullivan, Portland General Electric Co.; and E. C. Cassidy, Kentucky Power Co. James A. Bell represented Hotpoint Co., donor of the awards for promotion of electric ranges, water heaters, and commercial electric cooking.

M. B. Penn (left) accepts first prize Frank Watts Award for Alabama Power Co. from Eliott Odell, Vice President of Farm Journal, Inc.

Third prize Frank Watts Award was won by Pacific Gas and Electric Co. Walter D. Howell (left) holds the award, presented by Mr. Odell.

E. D. Smith (left) The Dayton Power and Light Co., and Mr. Odell hold the second-prize Frank Watts Award, presented for rural sales promotion.

J. F. Morton (right), New Orleans Public Service Co., Inc., receives his company's More Power to America Award from Karl Runkle, representing General Electric Co.

Mr. Runkle presents S. F. Diffenderfer (right), Pennsylvania Power & Light Co., with a More Power to America Award to recognize contributions to industrial electrification.

Texas Power & Light Co.'s Homer M. Gibbs (left) accepts Thomas W. Martin Rural Electrification Award. Making the presentation is donor's representative E. A. Wilson.

Selling Job Ahead, Adequate Wiring Emphasized at 21st Annual Sales Conference

EMPHASIS on the big selling job still to be done by the industry and awareness of the problem of adequate wiring were the main themes at the 21st Annual EEI Sales Conference held at the Edgewater Beach Hotel, Chicago, on March 28-31. Approximately 1200 electric company sales executives attended.

O. R. Doerr, Vice President of Pacific Gas and Electric Co. and Chairman of the EEI Commercial Division Executive Committee, presided over the General Sessions on Wednesday, March 30, and Thursday, March 31. He opened on a note of optimism pointing out the almost limitless possibilities in the electronic-atomic age for the electrical industry and the spirit of optimism prevailing as to business prospects for the balance of 1955, stating that the industry was making good progress in capitalizing on the opportunities created by the present favorable climate for business generally.

Problems Facing the Industry

But, he cautioned, there are problems facing the industry. One of the most important is adequate wiring. While saying that this activity has shown promise of real progress—with the Adequate Wiring Bureau's 1955 campaign program and package of material, the National Home Builders Association recommendation to their membership on an entrance wiring specification, together with generally available installment finance plans for wiring modernization—he pointed out there is still much to be done to lessen and ultimately remove the serious inadequate wiring bottleneck.

Industry weaknesses in point-of-selling techniques and the fact that utilities do not yet have sufficient trained manpower to do the volume sales job justified by the current large potential emphasizes the need for continued effort and leadership from EEI Commercial Committees and allied groups, he said.

In concluding his remarks, Mr. Doerr stated that the main objective of the Conference was to supply information and stimulation on sales problems.

At the Wednesday morning general session, Harold Quinton, President of the Institute and President, Southern California Edison Co., stated that there is still a big selling job to be done in the electric industry despite the fact that kilowatthour output is running 14 per cent ahead of last year. A record total of 11 million kilowatts of new generating capacity was installed by the electric industry in 1954, he pointed out, but the schedule for this year calls for an even higher total, 13 million kilowatts of new generating capacity. And new additions will continue at a high level, he said, thus indicating that utility management, to keep their capital employed, are headed for a selling job of considerable proportions. We have a selling job, not only to maintain a good rate of business growth, but to assure the fact that this growth shall be sound and healthy, Mr. Quinton said.

Also a new factor in the selling picture, he pointed out, involves air conditioning and electric heating, with all classes of electricity sales now greatly influenced by hot and cold weather.

Mr. Quinton told the commercial executives, "It is your planning, preparation, and execution of informed sales that will hold the load curves in balance, and assure through the years ahead an adequate net income." Electric company sales managers have a "tough, challenging, and important problem in making our progress certain by continuing to increase the volume of sound and profitable uses of electricity," Mr. Quinton commented. He said that an important problem in the foreground at this time is the re-examining of wiring methods to assure safe and adequate wiring facilities for the loads now being built.

Prospects for Continued Expansion

Dr. Jules Backman, Professor of Economics at New York University, told the Conference that the sales of electric power will continue to expand with unabated vigor in 1955 and in the years ahead. This is because in the past seven years total energy sales have about doubled and recent estimates by the industry indicate that they will double again in the next decade, he said. The educator commented that this expansion will necessitate the installation of a substantial volume of new capacity and hence will require large amounts of additional capital, and, as most of this capital will have to be obtained from private investors, it is of vital importance that the earnings position of the industry be kept in healthy condition.

Dr. Backman pointed out that many appliances are still in the early stages of growth and that increases in the number of these appliances will act to stimulate further residential demand for electricity, which reached a record total of 2540 kwhr per home in 1954.

Presentation of Prize Awards

One of the highlights of the Wednesday morning sessions was the presentation of the annual prize awards for the seven contests sponsored by the EEI Prize Awards Committee. Harry Restofski, Vice President of West Penn Power Co. and Chairman of the EEI Prize Awards Committee, conducted the presentation.

The Thomas W. Martin Rural Electrification Award, given for the greatest contribution to rural electrification and agricultural advancement in a company area, was awarded to Texas Power & Light Co.

Planned Lighting Awards, given to honor operating electric companies who most effectively raised the standard of lighting in their communities, were awarded in three categories—Commercial L i g h t i n g, Residential Lighting, and Industrial Lighting. There were three winners in the first group, Consumers Power Co., Mississippi Power & Light Co. and Pennsylvania Power & Light Co.; two winners in the second, New Orleans Public Service, Inc. and Union Electric Co. of Missouri; and one in the third, The Cleveland Electric Illuminating Co.

The Frank Watts Awards, offered to recognize promotional and sales efforts in rural areas by operating electric light and power companies, were won by Alabama Power Co. as first prize winner; Dayton Power & Light Co. as second, and Pacific Gas and Electric Co. as third.

Winners of the George A. Hughes

Awards for outstanding achievement in the field of electric appliance sales and promotion were Florida Power & Light Co. in Division A and Mississippi Power & Light Co. in Division B in the Electric Range Activity; Florida Power & Light Co. in Division A and Portland General Electric Co. in Division B in the Electric Water Heater Activity; Texas Power & Light Co. in Division A and Kentucky Power Co. in Division B in the Commercial Electric Cooking Activity.

The Laura McCall Awards, offered to give public acknowledgement to home service work, were awarded to Ruth D. Kruger, Arizona Public Service Co., in Division A; Edna F. Moore, The Empire District Electric Co. in Division B; and Mildred S. Ditzel, The Dayton Power and Light Co., Ruth L. Hicks, Alabama Power Co., and Marguerite G. Surles, Carolina Power & Light Co. in Division C.

More Power To America Award winners were Pennsylvania Power & Light Co. in Division A and New Orleans Public Service, Inc. in Division B. The award is given to increase the productivity of American industry by encouraging creative, broad-scale industrial electrification activity.

The Washington Water Power Co. and Pennsylvania Electric Co. were winners of the George Westinghouse Awards given to recognize and stimulate outstanding performances in the promotion of electric laundry equipment.

The past decade is a remarkable one, but the next decade can truly be a thrilling experience, Ralph J. Cordiner, President of General Electric Co., told

Laura McCall Awards winners are (left to right) Mrs. Marguerite G. Surles, Carolina Power & Light Co.; Miss Ruth D. Kruger, Arizona Public Service Co.; Mrs. Mildred S. Ditzel, The Dayton Power and Light Co., and Mrs. Ruth Hicks, Alabama Power Co. Mrs. Elizabeth Sweeney Herbert, McCall's magazine, made the presentations. Another winner, Mrs. Edna F. Moore, The Empire District Electric Co., was not present to accept her award.

(Left to Right) EEI Prize Awards Committee Chairman Harry Restofski looks on as Gordon F. DeFoe holds The Washington Water Power Co.'s first prize George Westinghouse Award and Robert W. Smith displays Pennsylvania Electric Co.'s second-prize award. J. J. Anderson represented Westinghouse Electric Corp., donor of the award which recognizes promotion of electric laundry equipment.

(Left to Right) F. G. Smith, Mississippi Power & Light Co.; R. L. Coe, Union Electric Co. of Missouri; E. P. Werley, Pennsylvania Power & Light Co.; W. A. Stannard, Consumers Power Co., and C. J. Sinnott, New Orleans Public Service, Inc., accepted Planned Lighting Awards for their companies from H. A. Stroud, Chairman of the Better Light Better Sight Bureau, donor of the awards.

Ray W. Wyman (left), The Cleveland Electric Illuminating Co., receives the Industrial Planned Lighting Award from Mr. Stroud. Other awards were in commercial and residential classes.

the Conference group at the afternoon session in his talk, "New Trends Stimulating Electrical Growth." But, he warned, even after years of preaching "adequate wiring," a recent survey in New York City revealed that 78½ per cent of Manhattan's new apartment units are already inadequately wired, even though 95 per cent of these apartments are less than 5 years old.

"In 1955 the electric utility salesman has an opportunity that he has never had before in history," Mr. Cordiner said. "Never in any previous decade have all of the potentially favorable factors which exist today been available to us."

If the electric industry is to live up to its historical role of doubling every decade, then its selling program must be continuous, consistent, and unremitting, he said. The fact is that this business of doubling every decade is no longer a matter of choice. If we slow down or try to stand still we will quickly fall behind the demands of our growing population. If we hesitate, the irresistible pace of technology will render our plants obsolete and uneconomic, he stated.

Planning for Long-Term Growth

To keep moving ahead, however, we must have a plan and a program adequate to the long term growth demands of this nation and its citizens, Mr. Cordiner said. We need no longer be held back by threatened shortages of power, of materials, or of customers; today we have a golden opportunity to plan ahead in a far-sighted and thorough manner. The only shortage we need fear is a shortage of our own vision of the future.

We have made tremendous progress in the electrical industry in improving efficiencies in power generation, distribution, and transmission, he commented. But we still have to send a man around to read the meter in essentially the same way as in Edison's founding days. In the long run the quantity and quality of service which the public demands will be achieved only by recognizing time as the important asset that it is, and therefore putting full emphasis on planning 10 years or more ahead, Mr. Cordiner said.

In summing up his ideas on the trends stimulating electrical growth, he said that the growth will be determined to a large extent by the wisdom with which we plan in the long term the best use of our assets, and the two most important assets are time and people.

Philip Sporn, President of American Gas and Electric Corp., pointed out that the achievement of the goal of the "all-electric" home depends on electric heating and year-round air conditioning, particularly through the heat pump. "In the coming quadrupling growth of the electric utility industry, it becomes almost mandatory to develop the year-round air conditioning load to keep the proper balance and stability in the financial structure, and in revenues and earnings," he said.

Potentialities of Electric Heating

Summer air conditioning, which is apt to have a high demand and a low annual load factor, will continue to be a difficult load to serve profitably; the obvious solution is to develop winter load and the most logical winter load on the horizon is electric heating, he pointed out.

Seeing the heat pump as the ideal solution for year-round air conditioning of homes as well as commercial establishments, Mr. Sporn said that the heat pump can furnish the winter heating requirements which will not only result in additional kilowatthours without any appreciable increase in the kilowatt demand, but will also reduce the amount of electricity consumed by one-third to one-fourth of that required by electric resistance heating.

Electric heating and year-round electric air conditioning have many inherent advantages, Mr. Sporn pointed out, but one of the big advantages is the fact that oil and gas reserves must be considered as transient fuels which will only last for decades, whereas electric energy, founded on hydro and coal, is assured for centuries, and with the coming of nuclear fuel, for thousands of years.

Price Considerations

Philip A. Fleger, Chairman of the Board, Duquesne Light Co., in his talk, "Let Us Recognize Our Future Problems," said that for many years sales of electric energy have been expanding at a rate which represents a doubling every decade and every possible effort must be made to sustain this pace because rapid expansion is probably the most essential element in the electric industry. "In spite of the enormous increase in payroll costs, material prices, and taxes during the past quarter of a century, the electric utility industry is delivering energy today at an average price which is only about ¾ of what it was 25 years ago," he said.

Things which must be taken into consideration in trying to estimate the probable future trend of electric industry costs, Mr. Fleger said, are the assumption that the general price level will continue to rise in line with the long term trend of the past and an examination of past experiences in the areas in which we have been most successful in combating rising costs. Such an examination clearly indicates that if current trends in these areas continue, our ability to offset rising costs will be substantially less than it was prior to World War II.

"The prospects for additional economies through improved load factor appear to be very good," he said. "But the fact remains that the rate of improvement in fuel requirements per unit of energy is leveling off and we have little prospect of being able to make material reductions in reserve capacity. It seems unwise, therefore, to assume that the rise in cost of making electricity which began in the middle 40's, and the current decline in our rate of return, is just a temporary phase," he said.

Shift of Emphasis in Sales Promotion

This might be a proper time to make a rather comprehensive review of current activities in the field of research, to reexamine our sales promotion programs in the light of rising costs and declining rate of return, and to develop new ways and means of increasing the load factor, Mr. Fleger commented. Maybe our present position might even warrant a basic shift in emphasis in our sales promotion. Instead of giving top priority to increased volume it may be advisable to give equal attention to promoting sales which will have the most beneficial effect on load factor, he said.

No doubt there are many other things which could be done to improve the current trend of our cost of doing business and of our rate of return. An effective sales promotion program, properly adapted to meet current conditions, can do more than anything else to put us back on the right track with a minimum of delay, Mr. Fleger concluded.

James H. Jewell, Vice President of Westinghouse Electric Corp., said that a sales potential of $12,000,000,000 for

the next five years in residential wiring and in additional apparatus, as well as the possible sale of 428 million new appliances, was linked to the solution of the nation's inadequate wiring problem.

Represented in the total were 8½ billion dollars in the home market for the electrical contractor, the manufacturer, and the distributor of wiring supplies and 3½ billion dollars in new apparatus business to supply this market. Mr. Jewell's talk was in the form of a new joint action package developed by the National Electrical Manufacturers Association in coordination with other industry groups, designed to acquaint electrical dealers, distributors, and contractors with the need for selling adequate wiring.

Mr. Jewell said that the five year sales potential depended on solving the two major problems of bringing wiring "in existing homes up to a level capable of serving today's needs as well as those of tomorrow" and avoiding wiring obsolescence "by seeing to it that new dwellings are constructed with an adequate electrical system of distribution, and not merely an inadequate wiring job of the 1925 era."

Education for Adequate Wiring

"Underlying a solution of these two major problems is one fundamental factor—the lack of understanding on the part of the public and the building industry on what is meant by adequate wiring," he said. "We must continue to educate and sell on the subject of adequate wiring." Of nearly 45 million wired dwellings in the United States, 34 million need to have heavier wiring for the appliances the occupants now own, but the occupants of these dwellings are totally unable to use the many new improved appliances the electric industry hopes to sell—or to buy the electricity the utilities are prepared to deliver, he stated.

Mr. Jewell cited the growth of the appliance business, noting that there are 56 different kinds of home appliances as compared with only 19 in 1930, and that in the last five years alone some 353 million appliances were sold.

Factors favorable to the selling of 428 million appliances in the next five years include the formation of new families, large increases in personable disposable income, and the building of new homes at the rate of about one million per year, he pointed out. If our industry really solves the adequate wiring problem, 428 million appliances can be sold in the next five years, Mr. Jewell said.

The concluding speaker at the Wednesday afternoon session was Fred Smith, Vice President-Operations of The Gruen Watch Co. He delivered an inspirational talk, entitled, "Selling: A Creative Way To Live."

John R. Worthman, a builder from Fort Wayne, Ind. opened the Thursday morning general sessions with a talk entitled, "Progress Unlimited." He pointed out that with a power rate of 1½¢ to 1¾¢ the residential heating by electricity is now very practical and can be marketed in homes of all price ranges and anywhere in the United States.

Need for Electrical Handbook

He stressed the need for an "Electrical Handbook" because electricity is one of the many phases which the progressive builder must be informed and responsible for, and these many phases make it impossible to keep up with all the trends and advances in each of the many industries the builder uses.

Pointing out the need for air conditioning in homes, Mr. Worthman said it looks now as if America is to have more air conditioned automobiles than air conditioned homes.

He said his principle concern is whether the industry can supply sufficient current soon enough to satisfy the new demands.

Future Prospects for Lighting

A feature of the morning sessions was a lighting presentation, "The Load Everybody Wants." James C. Forbes, Manager of Market Development, Large Lamp Department of General Electric, opened the presentation with a talk on lighting's future. He showed that in the number of lamps sold by the industry, they are 175 per cent ahead of 1940 and by 1965 this will have increased to 225 per cent. Lighting kilowatthours have increased by 275 per cent and in the next ten years will almost double to 500 per cent. The lumen-hours of light that the customer buys are already 400 per cent above 15 years ago and in 1965 will more than double again, he said. To more than double the lighting load growth in the next ten years will require effort by the entire industry. It will demand extensive national advertising and promotional programs by manufacturers—hard selling by distributors, dealers, contractors—leadership and aggressive promotion by utilities, who will play the key role in sparking real lighting sales in their service areas. "We can provide customers with far better quality and quantity of light than we now have—with far greater rewards for every element of our industry," Mr. Forbes commented.

Promoting the Lighting Load

Merrill E. Skinner, Vice President and Director of Sales of Union Electric Co. of Missouri, followed with "A Utility Executive Looks at Lighting." He said that the industry should take time to re-assess the value of the basic load of the electric industry. He then listed eight good reasons why utility sales managers should be shooting for the targets Mr. Forbes outlined. They were:

1. The customer will accept higher and higher levels of lighting, so long as the industry engineers the installation for comfort.

2. Lighting penetrates and serves in every market—farm, residential, commercial, industrial and outdoors; it is important to every company.

3. Lighting is estimated to use 27 per cent of all kilowatthours sold.

4. Gas can't touch the lighting part of the business and there is no competitor in sight. Technical improvements in the lighting field go forward unceasingly and improved efficiency opens new vistas of opportunity.

5. Lighting load adds stability to the system load curve; in the stores, offices, and factories, the lights go on at the beginning of the day and stay on all day.

6. In the early days, lighting had to carry full responsibility for the system peak load because there was no other load; today the percentage of the lighting load which is coincident with the system peak depends on the nature of the individual utility's load curve which, in turn, depends on such factors as the geographic location of the utility and the nature of the dominant load served.

7. To complement air conditioning, about all there is to work with are lighting and heating; a dollar spent on lighting promotion should do more good in many situations than one spent on heating.

8. The home owner whose home is beautifully and adequately lighted, the retailer who is aware of the benefits he has derived in terms of increased

sales due to good lighting, and the industrialist who knows of the added profits he has earned through increased efficiency due to well engineered lighting in his factory and office—all are willing subjects for being sold more electrical living.

Lee E. Tayler, Director of Commercial Sales, The Detroit Edison Co., and Frank C. Pesveyc, Sales Promotion Manager, Public Service Electric & Gas Co., gave a presentation promoting four new lighting promotions in the major markets—Beauty Plus, the Commercial - Industrial Planned Lighting Program, and a Farm Lighting promotion.

J. C. Doyle, Sales and Advertising Manager of Ford Motor Co., closed the general sessions with an interesting, inspirational talk entitled "Selling Is The Answer."

Ancher Nelsen, administrator of the Rural Electrification Administration, praised electricity's part in aiding the nation's farmers, in his talk at the Farm Luncheon on Tuesday, March 29.

"For every dollar of government loan invested in plant construction, it is estimated that the farmer spends $4.00 for electric wiring and appliances. In other words, the farmers have already purchased 10 to 15 billion dollars worth of merchandise that they would have no use for without electricity. It is easy to see what this has meant in creating jobs for the working man, business for the manufacturers, and efficiency on the farm," he said.

Nelsen said that the REA is now grown up and established on a sound footing. It is operating a $2.5 billion plant, mostly distribution lines, that is bringing electric service to 4 million rural families. He said that the task of bringing electricity to the farm and using it there is a never-ending one. He urged the cooperation of private utilities in the future growth of this service.

"Rural electrification will never be done so long as urban and rural people continue to want better living and so long as science and industry continue to produce the devices that help them achieve it. Rural electrification is really just one phase of the over-all job of electrification, and this job is so big that it requires the cooperation of all segments of the electric power and equipment industries. Let's join hands in this tremendous undertaking," he urged.

Curtis E. Calder

Curtis E. Calder, Executive Committee Chairman of Electric Bond and Share Company and one-time Director General of the War Production Board, died April 2 at Harkness Pavillion, Presbyterian Hospital, New York, after a lingering illness. Mr. Calder was 64 years old.

At the time of his death, he was also vice chairman of Ebasco Services, a director of Bond and Share, Ebasco Services, and American & Foreign Power Company.

Born in Winfield, Kansas, Mr. Calder virtually grew up with the utility industry to become one of the nation's leading business figures. Beginning his career in the utilities field at the age of 16, he joined the old Electric Bond and Share system at 23 as an officer of Texas Power & Light Company. Mr. Calder subsequently became president of that company, Dallas Power & Light Company, and Texas Electric Service Company, before coming to New York.

From 1927 to 1944, he was president of American & Foreign Power Company, which is responsible for operation of subsidiary companies in Latin America.

In 1944, he was elected board chairman of Electric Bond and Share, serving in that capacity until he was named chairman of the executive committee three years ago.

The Home Service Conference was held on Monday, April 4, with morning and afternoon sessions. On Tuesday the Commercial, Farm, Industrial Power, and Heating and Residential Groups held morning and afternoon sessions.

Four special events took place during the four day conference. They were the Home Service Breakfast on Tuesday, at which Mrs. Ruth P. Steinhauser, Director of Public Relations, Community Public Service Co., Fort Worth, Texas, was the speaker; the Farm Luncheon on Tuesday, at which Mr. Nelsen spoke; a PUAA luncheon on Wednesday, where Miss Betty Furness gave a talk entitled, "A Woman In Television;" and the General Luncheon Session on Thursday noon, at which William H. Gove, Vice President and Sales Director of E.M.C. Recordings Corp., St. Paul, Minnesota, presented his speech, "Why Sell?"

Los Angeles Convention

(*Continued from page* 105)

Studios motion picture lot outside of Hollywood. Bus transportation will be provided from the Biltmore and Statler Hotels to the studio.

Wednesday, June 15—

10 a.m.—For the ladies, a tour of Hollywood and Beverly Hills, followed by Ladies Luncheon at the outdoor Copa Club of the Beverly Wilshire Hotel. Edison Electric Institute host. Included in the route of the tour will be the homes of prominent motion picture personalities. The luncheon, which will be attended by a number of movie stars, will feature a fashion show as well as a diving exhibition in the Club pool.

8:30 p.m. — Presentation of the Charles A. Coffin Award, Paramount Theatre.

Following the presentation, General Electric Co. will present a musical review entitled "Light Fantastic." Featured will be Jane Froman, Ronald Reagan, George Gobel, the Wiere Brothers, and others. The production will have a complete story line, sets, costumes, a cast of 22 singers and dancers, and a 16-piece orchestra.

Sightseeing Bus Tours

In addition to these scheduled recreation events, sightseeing bus tours in and around Los Angeles will be conducted on Tuesday evening during the daylight hours, and on Wednesday afternoon when no business sessions are scheduled. Tickets for the tours may be obtained at the Convention information booths in the Biltmore and Statler Hotel lobbies. These booths will also have information on various locations where attractions ranging from good food to light opera are offered.

Los Angeles has shown phenomenal growth during recent years and has become one of the great metropolitan centers of the nation and of the world. With its tremendous vacationland potential and its leading position as tourist mecca and movie capital, it offers many aspects and interests which promise an outstanding background for a successful meeting.

Engineering Opportunities in the Electric Utility Industry

By Harold Quinton

President, Southern California Edison Company, and
President, Edison Electric Institute

An address before the American Power Conference, Chicago, Ill., March 30, 1955

TODAY the electric utility industry offers opportunities and challenges of all kinds for imaginative and creative engineers. And, just as important, it also offers great rewards in satisfactions derived from accomplishments which often amount to substantial contributions to a better way of life for all our people.

But for even more tangible reasons, a career in the electric utility industry should be one of the first considerations of ambitious young engineers. It is essentially an engineering business. Engineers comprise a large part of its management and personnel. Engineers are responsible for the industry's enormous expenditures of money and for the dependable supply of its vital service. I speak here as one who has become familiar with the work of the engineers of the electric utilities and as one who is frankly impressed by and a great admirer of their work. Their outstanding contributions to research and development in the engineering field are countless in number and rank high among those factors responsible for the development of modern civilization. Let us take a brief look at some of the accomplishments of the electric industry's engineers.

Value of Research

The very great value of professional research, and of assignments to the engineering colleges and institutions and laboratories, is well known to the electric industry. Its use of these agencies of progress, improvement and betterment has been and is widespread. Research in the industry is, in fact, commonplace. Witness the research work now being done by various utility companies and industry groups on atomic power techniques, air pollution control, high temperature metallurgy, on instrumentation controls, on microwave telemetering, and in many other fields. Matters and problems which are sometimes a source of extensive publicity in other industries are, to a large degree, routine in the engineering organizations of the utilities. The assignment of their solution to scientific agencies is also frequently routine. Perhaps we have been remiss in failing to publicize these activities, and it may, therefore, be timely to say something about what the utility engineers have done, and continue to do.

To me, the engineers have done an outstanding job of development, whether through research, or design, or through just plain ingenuity. They not only are making great progress, but they may be making it faster than many other industries which get more publicity and, hence, more engineers.

Comprehensive Accomplishments

I might approach this thesis by individualizing specific bits of development, or by pointing out individual or group ingenuity, but I believe it will be more helpful to do it through discussion of some of the more comprehensive accomplishments of these engineers. In doing so, I shall consider that the term "utility engineers" will include the engineers and the research men directly employed by the utilities and associated engineering firms, along with the engineers and scientists of the manufacturers who produce utility equipment. Certainly the accomplishments have been the result of a group effort, with the powerful drives first, of recognized need, and second, of competitive ingenuity.

Consider first what the utility engineers by their own efforts have done in steam electric generation. Even though the principle on which steam turbines operate had been known for centuries, it was only when put to work by the utility engineers that the steam turbine became a real economic factor. As developed by the utility engineer, it pushed the reciprocating engine out of the market as a prime mover 50 years ago. Since that time these engineers, working with the manufacturers, have pressed continuously for five basic improvements in steam electric equipment, all seeking lower energy cost.

First, better thermal efficiency; second, lower maintenance; third, lower equipment costs; fourth, greater simplicity; and fifth, improved control. Under this continuing pressure, over the past 50 years, thermal efficiencies have improved by moving upward in pressure an average of about 43 pounds per square inch per year, and in temperature, an average of 12 F per year to an aggregate reduction in full use per kilowatthour of sevenfold for the average U.S. station. During the last five years alone, according to Federal Power Commission data, the average thermal efficiency has improved 24 per cent. To obtain this gain, four eras of metallurgy have been passed through. First was an age where the principal material for both temperature resistance and for strength was cast-iron. Then, as the need for greater heat resistance and greater strengths developed, the cast-steel and the steel-alloy eras were passed through into the present age of super alloys. There have been hurdles along the way, but each has been cleared in turn. Currently, there are still problems remaining to be solved, but the utility engineers are actively at work on them and real progress in their solution is being made. Each advance in metallurgy has improved not only turbines, but also boilers, piping, pumps, and valves.

Decreasing Weights, Sizes

In order to utilize higher pressures and higher temperatures, not only the problems of economy, but also those arising from differing temperatures in component parts demand speeding up rotation and hence, decreasing the

weight per kilowatt of capacity. New cooling methods also greatly reduced generator sizes. A 20,000-kw turbine generator set of 1915 vintage weighed more than 33 lb per kw, compared with less than 9 lb per kw for the modern 160,000-kw set.

Boiler-wise, during the same time, these same engineers, seeking the same objectives, have developed boilers from the hand fired drum of some 50 years ago to the great fabrications of tubes today. Hand firing has been completely displaced, even for the modern gas and oil burning plant. Automatic remote controlled firing is the order of the day, with fuel feed to the furnace automatically paced to the demand on the generator. The whole technology of pulverized coal use was developed by the utility engineers. Today it has no modern competitor in the firing of coal burning plants. To recover more and more heat from the fuel, these same engineers originated heat absorbing walls —systems to heat feedwater and air before they enter the boiler or the furnace, with heat which otherwise would be lost. Also, they originated systems to reheat and reuse steam before it passes to the condenser, and many other features. So fast do these developments come that a new plant today may be so outpaced by one five years later as to be on its way to a less and less active role in the over-all power supply of the system.

Progress Not Complete

Although I have used the past tense, this progress is not complete. It will never be complete. It continues, until now we look forward to the use of pressures so high that steam is compressed until it is like a fluid. Steam temperatures have gone to 1200 F, and as soon as metals are available to give the required strengths, they will go higher. The utility engineers look forward to extensive research to study further the physics of steam up to 6000 pounds pressure, and 1600 F, and are currently working on several metallurgical researches. Although the increasing costs of higher pressures and higher temperatures are tending toward diminishing returns, there are attractive gains in sight, with others to follow when this ingenuity further simplifies boilers and piping. With all this advance and no end in sight, there is plenty to attract and excite the finest enginering talent.

It is significant that the progress made by the utility engineers has been great enough to lower generating and over-all energy costs continuously until the inflation caused by wars and politics finally more than offsets the gains. Even so, many steam power plants are being built today for costs which are no greater in dollar costs per unit than they were four to six years ago.

Protective Devices

Consider for a moment what the utility engineers have done in the development of circuit breakers and protective devices. So excellent have these devices become that a short circuit can be cleared in from 1/20 to 1/30 of a second—that is, often before a broken conductor can fall to the ground. Nor is this field fully developed. Five years ago it was suggested that circuit breakers, capable of interrupting power of 10 million kva, would soon be required. Now we are told that it will soon be necessary to interrupt two and one-half times that power on a single breaker. Such breakers are now available. Laboratory research as such has been of little help in this field because there is no laboratory in existence, nor is one likely to be built, which could produce such power for adequate testing. Only system use can "separate the men from the boys," as the saying goes.

Automation has had much publicity lately as though it were quite new. The utility engineers have controlled generators, turbines, boilers, and all manner of auxiliary equipment by automatic devices for many years. Witness the almost universal tendency toward centralized control of all the elements of a steam electric plant. Also witness the growth in the use of supervisory controls, tie-line load controls, frequency controllers, and the many other devices which give a remote operator information on automatic operations carried out, as well as the basis for manual intervention if necessary. I am told that the modern centralized control installation will include on the switchboard for a single steam electric generating unit more than 700 individual informers and 250 individual controls. The devices used include all the techniques which electronics and physics have made available. Even television is utilized to bring furnace and water glass images right into the operator's desk.

Possibly the most rapid adaptation of a new principle to private use ever made has been the adaptation of microwave communication by the utility engineers since World War II. My own company has sufficient installations to provide 190 channel-terminals. It is used not only for voice communication, but for the transmission of all kinds of intelligence, and for all kinds of controls. The savings realized over the cost of the equivalent communication by land lines has been enormous. Our company has developed these techniques to provide remote control for the outlet gates to a reservoir high in the mountains 300 miles from load centers and 30 miles from the operator.

Industry's Contributions

In the field of electronic office equipment there is probably no other industry that can equal the electric, gas, and telephone utilities in their contributions to the advancement of the art of mass record processing. Similarly, for research in operation of electric systems, the companies are extensive users of the most modern computers. Such facilities are also used in apparatus development and in application engineering.

I can only touch on a few of these developments which to me are as glamorous as any others now taking place in any industry.

Research and Development

Perhaps a word about research and development should be mentioned at this point. Research is well used to determine fundamental phenomena and to solve problems of detail—particularly the detail involved in overcoming limitations, restrictions and difficulties, and it is extensively so used in the electric industry. After all, the great progress in the industry in the solution of fundamental problems did not just happen. It is not just an accident that the cost of electric power has dropped to 6/10 of one per cent of the value of all manufactured products. Experience has proved, however, that research is not a panacea. Unless the owner has, within his own organization, people who can follow closely research being done by outside agencies, it is too often "shot-gun" in nature, and inclined to require disproportionate expenditure and a great deal of correlation of the theoretical to practice. Abstract research, also, unques-

tionably has great value but probably not as something to be done by the utilities themselves. The field in this respect, of course, is unlimited. The utilities do directly spend very large sums annually for research. But even more important, they spend much larger amounts through the payment of "development costs" passed on in the purchase price by the manufacturers of apparatus and equipment; in the latter way about 3 per cent of each equipment purchase dollar goes for research. Also in this way, the fine research facilities and the work of the great industrial companies, which are devoted to the development of utility apparatus, are supported by the apparatus purchasers. Further development then continues through actual service testing by the purchasers.

Research Methods & Results

This, as only one of many methods of handling research, has been proven productive and, to me, is an admirable way of spreading its costs and obtaining the full benefits of competitive ingenuity with minimum duplication.

It would be impossible to discuss in any reasonable length of time all the developments which have been made by the utility engineers as a result of either individual-company sponsored, or of group, research. But it will be indicative to list, in addition to those I have already mentioned, a few. This list includes such accomplishments as:

Development of the whole field of high-voltage transmission of large blocks of energy.

Development of the long list of relays and related devices which protect the modern power system from all kinds of interruptions and give the consumer such uninterrupted service that he uses it even to time precision manufacturing.

Development of the heat pump for air conditioning. My own company built the first office building completely equipped with heat pump air-conditioning in 1930. It is still very efficient.

Development of the present knowledge of the arch dam by full-scale model testing.

Development of numerous water control and water conduit devices and improvements. Witness the use of all electric welded penstocks, the differential surge chamber, the underground penstock, etc.

In our company alone in recent years, a new technique has been developed for completely controlling the fouling by marine organisms of seawater conduits without service interruption or the use of chemicals. Further developments through the efforts of the company's own engineers and consultants have been fabricated water wheel buckets, improved water wheel efficiencies through cooperative research into the effect of bucket shapes; formulation of the mechanism of land subsidence, caused by the removal of fluids from the earth; the use of electronic means of measuring the strength of concrete dams; means of greatly extending the life of concrete structures exposed to freezing and thawing; means of extending the life of brass condenser tubes. Another development on our own system has been the design and construction of a long (43 mile) hot oil pipeline to transport heavy fuel oil from refineries to point of use, and improved means of burning petroleum tars and pitches for steam generation.

Professional Opportunities

Now, what about the opportunities for engineers, and for other professionals in the electric utility industry? I believe it can be truly said that no industry offers greater opportunity for a greater variety of technical talent. For instance, during the past 12 months, over and above the normal electrical, mechanical and civil engineering which enters into everyday operation, our company has had problems which have required specialized information, from scientists, engineering colleges, and consultants, and our own people, in such seemingly unrelated fields as marine biology, submarine construction, glacial geology, petroleum geology, engineering geology, oilfield reservoir engineering, foundation engineering, precise surveying, uranium exploration, concrete technology; radio, television, and microwave engineering; metallurgy; meteorology, including cloud seeding; analytical chemists dealing with traces of elements; switchgear specialists, watershed hydrology, hydraulic engineers specializing in dams and water control, air conditioning engineers specializing in heat pumps, and even specialists in forestry and reforestation. And I should also mention the work we have done with specialists in the use of both analog and digital computers. This work was all in addition to the engineering that enters into the selection of thermal, electrical, and hydraulic equipment, and into the design, the construction, and the operation of all the technical functions connected with any large power system. On top of this, there have been problems related to atomic power. These will grow, and there are still areas in our industry which need more research, further examination, or greater attention. In all the different lists that I have seen, there is not one to which I could not add some additional areas which merit such examination. But it is this very feature—this great variety of problems—which so entices the confident young man who is looking for a test of his best effort.

Group Activity

Now, of course, this more comprehensive engineering and scientific activity is found principally in the larger companies. That is why we engage extensively in group activity. The Edison Electric Institute and other industry associations have utilized the services of scientists, the engineering schools, and the laboratories and splendid research organizations in the country for many years. Such projects are even now pending, or in progress. So group activity is not at all unknown to the industry. However, there is another important feature of our industry which substantially reduces the need for such group activity, and that is the complete freedom of exchange of ideas, experience, developments, and progress which takes place between all of the member companies. Last year's President of the Institute, Walter H. Sammis, expressed this as being unique in all American industry. By contrast, for example, companies of the chemical industry, steel industry, and the electronics industry frequently jealously guard their individual developments and progress to the point even of unrecorded secret formulas. Our unique freedom of exchange of ideas is not limited solely to the utilities themselves, but their developments are openly available in the whole public interest. And I might add, it is available to the academicians, the laboratories and the research organizations. It is a unique feature of the industry which should be of great interest and most attractive to the young engineer.

(*Continued on page* 126)

Are Public Power Programs in the Public Interest?

By Alexander M. Beebee
President, Rochester Gas and Electric Corporation

An address before the American Power Conference, Chicago, Ill., March 31, 1955

IT is my purpose to discuss with you the issues involved in the controversy of public vs. private power. This is a very important matter and one which I feel will have a profound effect on the future of this country. It is my desire to speak frankly and objectively, with the hope that what I have to say will at least provide some food for thought, so that a clearer understanding may result. Emotions are apt to run high on this subject, and, since there have been so many claims and counter-claims, many people are confused. As a result, I feel that the real issues have often been lost sight of. In order to best develop my thoughts on this subject, I have chosen as my subject: "Are public power programs in the public interest?"

Issues Vital to Country's Future

That question undoubtedly will quicken the pulse as well as probably arouse concern on the part of those loyal to public power programs. However, the issues involved are so fundamental, and so vital to the future of this country, and I hope we can carefully consider the points to be discussed in this paper without rancor and with clear minds, and from the standpoint of broad public interest. Perhaps as a result, some steps can eventually be taken that will help to solve this problem in the best interest of all.

Everyone will agree that electric power is one of the most important components of our modern economic system of society with its high standard of living. However, until some of these conflicts are resolved on a sound basis, the full benefit from this great influence for good cannot be realized.

The bitterness and accusations that have developed in the Dixon-Yates matter, the Hell's Canyon controversy, and the dispute in the Niagara issue are cited to show that strong forces and deep-seated concepts are involved. Such conflicts do not develop if the solution is a simple one or if one side is wholly wrong. Public opinion in a democracy soon disposes of such easy problems.

Both sides of this issue are moved by a desire to better serve the public. As a result the public is confused, and it is therefore vital that we carefully analyze the situation if it is to be solved in the public interest.

Various articles that have been presented on this subject from both points of view leave one with an impression similar to that of the two blind men, of whom you have all heard, who went to "see" an elephant. One got hold of his tusks and trunk and the other his legs and tail, and they had surprisingly different impressions to report. I hope that we here can better see the whole picture.

There is no doubt but that most, if not all, public power programs have been conceived with the highest of motives and objectives. Many people are loyal to them. Why then can they be challenged? Have conditions changed so that what may have been considered wise under earlier circumstances is not wise at the present time? To find an answer we must first consider some basic facts to form a background for our discussion.

Fundamentals of American Economy

We must remember that we are all part of a great democracy, and if a democracy is to work, grow and prosper, it is vital that certain fundamentals be carefully established and respected, and that we understand the incentives and motivations that make it operate successfully.

It is perhaps discouraging to follow the path of history and see the inescapable fact that all cultures of the past have flourished and then vanished from the earth. The remarkable ruins all over the world are silent testimony of the material progress that frequently developed, only to be obliterated. The question that instantly arises is, "Will *ours* do likewise?"

I do not have to tell you of the amazing material achievements of our present-day American economy. We have more and better homes, more and better food, and drudgery has largely been eliminated from industry and the home; conveniences unheard of in the past and even today in many other countries are here commonplace. Why has all this been achieved? We, as a people, are no different from other races and other nations; human nature from prehistoric times has changed little, as reading the Old Testament quickly discloses. We, as a country, have been generously blessed, but we do not have a monopoly on natural resources.

Comparison of Past and Present

If we reflect for a moment, we find that cultures of the past have largely been built on muscle power, the use of slaves, and the plunder system. On the other hand, our American economy has been built on the principle of freedom of thought and action, a reward of effort, an incentive to produce, and the wide use of energy to multiply the productivity of the individual.

To appreciate the effect of this latter factor, it is interesting to note that the muscle power of a man in prime health is only about equivalent to the energy needed to operate a 40-watt light, which can today be purchased for a year for $2.00 or less depending on the classification of the service. In other words, the muscle power of a strong man can be purchased for a small fraction of a cent per hour, and much less than the cost of a single cigarette per day. The American worker, with some 8 to 10 kilowatts available to him, has had his productivity multiplied by over 240 times through the use of tools and energy.

Cultures of the past existed largely on progress achieved through the ef-

forts of others. Ours has prospered on an entirely different principle of "live and help live." You may wonder what all this has to do with our subject, but I'm sure you will see as we go on.

The "Ego Urge," we are told, is the most dominant force in human make-up. It is the spark plug of progress. It also can be its ruination. Most of our evils spring from an ego urge that has become the master of the individual, i.e. selfishness, vanity, jealousy, envy, desire for "something for nothing," arrogance, and dominance. The good things spring from an ego urge that has become the slave rather than the master of the individual; i.e. courage, resourcefulness, ambition, and a desire to be of service to others. I mention all this because it shows that the dividing line between the different motivations of human drives for good and for evil is often very thin indeed, but the differences in the end results can be tremendous. The same is true in the operation of our system of society.

The Profit Motive

There is one more point that needs to be considered. Recently a minister in Rochester made a statement which impressed me as best explaining why it is so important to preserve the principles of our American free enterprise system. He said:

> Selfishness may express itself in socialism or communism as fully as—or more so than—in capitalism, because the authorities in a collective state have far more power over their fellows than in a free state. Unselfish service may express itself in capitalism as well as or better than in socialism or communism. The profit motive may be selfish, but to obtain a profit one must render a service better than his competitors. Profits result from producing goods or services that people want, in better quality or in greater abundance, or at lower prices than others. Profit is the proof that a benefit has been conferred on society. It is a badge of merit, a medal of honor as evidence that one has done something for his fellows. A profit-seeker dare not be slothful; a bureaucrat *may* be and usually *is*.

I doubt if we can deny that one of the principal reasons for the startling accomplishment in this country has been the keeping alive of the natural drives in human nature in a constructive way, through a reward for effort with an incentive to produce. So far at least, we have been able to prevent the demoralizing effect of the modern method of the plunder system, in which certain groups tend to live off the efforts of others.

We should always remember that we must form a system of society on human nature as it *is*, not as we might wish it to be.

Now to discuss how all the above fits into the subject before us. However, some further fundamentals must also be considered.

Fundamentals of Power Generation

There is no denying the great importance of reliable, low-cost electric power in developing the productivity of the individual, in relieving the burden of physical labor and drudgery, and in providing many of the luxuries and comforts of modern living.

Electricity, gas, oil, coal, etc., are merely convenient forms for transmitting energy. Each has certain advantages. Electricity, however, has many properties that make it particularly convenient in meeting the energy needs of our complex society.

Electric power can be made from any and all fuels including the energy of falling water, and soon, we hope, from atomic energy. Historically, the energy from falling water has generally been somewhat cheaper than energy from fuels (except under unusual conditions) largely because of the larger labor component in the cost and use of fuels. However, because some hydro power is cheap does not mean that *all* hydro is cheap. Great progress in the development of steam power generation has taken place through modern improvements in the thermal cycle used in modern high-pressure and temperature steam plants. Where formerly two to three pounds of coal were needed to make a kilowatthour, present-day plants do so with less than ¾ of a pound. A modern steam plant using coal can be built for around $150 per kilowatt of installed capacity, but to provide the fuel to make a kilowatthour will cost some 3 mills in most locations, which fuel cost a hydro plant obviously avoids. Keep that $150 figure in mind. Except for taxes and interest, the other operating expenses in modern plants, either hydro or steam, are only a small portion of the cost of the delivered kilowatthour.

Thus we see that the only advantage of hydro power over steam power is in the saving of the fuel cost. On the other hand, hydro plants are apt to cost more to build than a steam plant, as heavy construction hydraulic facilities are often involved, such as dams, etc. Thus there is a limit beyond which the cost of a hydro plant cannot go before the cost of the resultant power reaches the cost of power from a steam plant, which latter may frequently be located more convenient to the market for power.

The added cost of hydro generation facilities over the $150 per kilowatt of installed capacity which a steam plant requires, therefore, must be supported by the 3 mill fuel cost that hydro avoids. Roughly, in most cases this 3 mill saving in hydro operating cost will justify an added cost for hydro of $150 to $250 per kilowatt, depending on the method of financing. Therefore, when a hydro plant costs in excess of these figures plus the $150 needed for a steam plant, or a total of $300 to $400 a kilowatt, a steam plant is generally cheaper. The above figures will, of course, vary up or down in locations where abnormally high or low fuel costs are involved. These very same fundamentals exist in the case of atomic power which, like hydro, tends to be a source of energy with a fuel cost less than coal but requiring larger investments.

Weather and Location Factors

Hydro power is also subject to the vagaries of weather, and is often located far from the market for power, which means expensive transmission costs as well as involving the hazards that affect reliability of service. As a result, generally speaking, the farther the hydro power must be transmitted, the smaller are the investment figures discussed above that can be justified for a hydro development.

Now what is all this about? It means that hydro power has a definite place in the generation of electric power, but in spite of its spectacular appearance it has many problems, not the least of which is the variance in stream flow and rainfall. It means that the fundamental advantage of hydro power is definitely limited. Hydro power now and in the future can supply only a small part of the elec-

tric power needs of the country. Hydro is now in the neighborhood of 20 per cent of the total, and as time goes on it will become a smaller percentage as electric requirements increase, as they are bound to do.

Nevertheless, hydro does have definite applications in many places where it is available. However, its real benefits have been greatly overrated in many cases, for as you will later see, its apparent benefit has been primarily due to other factors that have nothing to do with hydro. Unfortunately these reasons are rarely understood and need further explanation.

Costs of Operation

In a modern utility plant under private enterprise, the costs of the power include the usual operating costs, taxes, and the interest charges to pay for the use of investors' money. The distribution of electricity involves expensive facilities. Usually for every dollar spent in generating facilities, nearly $2.00 is needed to get the power to the customers. The plant investment per employee in a utility business is nearly six times that of typical American business. Generally speaking, it takes four years of sales revenue to equal the original cost of the facilities needed. This ratio of four to one is many times that of most American industry. Utility business, therefore, requires heavy investments.

Under present methods of electric utility operation under private enterprise, roughly 40 to 50 per cent of the revenue is required to pay taxes and carry the investment needed to serve the customers with electric power. Taxes alone take from 20 to 25 per cent of the revenue. Direct taxes alone on private utility operation are more than the cost of fuel, and are usually the largest item of expense, even being generally more than wages and salaries except in certain areas. Again remember that the absence of fuel cost is the only advantage hydro has over steam.

The absence in hydro power of the entire cost of fuel required in steam-produced power generally is only 10 to 15 per cent of the cost of most electric service except in the case of large power loads. Hence this saving is not the great factor many think, as compared with the 40 to 50 per cent involved in taxes and investment costs.

If the people in areas adjacent to hydro developments are to save the cost of fuel in their power bills, should they in addition be allowed to avoid not only direct taxes, but indirect taxes, interest, etc., which most other sections of the country must carry in their cost of power? It is therefore easy to see why public power electric operations that can avoid taxes and save on investment charges can make a tremendous reduction in the cost of power, no matter what the source of the energy may be.

It is primarily this tax-avoidance feature and lower interest charges again as a result of tax privileges, rather than the fundamental inherent advantages of hydro, that have often made it possible for public power programs to show surprising results that at first seem to be justified in the public interest. But why should these privileges be given hydro power?

In many cases of public power programs, hydro power was originally associated with flood control, navigation and irrigation, and frequently was a by-product of such operations. Since some people claimed that private enterprise could not so readily become involved in these other phases, there developed a tendency for such power projects to be publicly operated. I never could understand why the "partnership" idea, recently proposed by the Administration, did not at that time receive stronger support. However, the ability of public power to avoid taxes and other burdens was a persuasive item to the people involved. It was for all these reasons that in certain limited areas there grew up these public power programs of which we are all aware.

Power on a Preference Basis

Of course, there have been many who felt that when electricity was produced as a by-product of other operations, it should be sold at its real commercial value so as to return the cost of the flood control, navigation, and irrigation phases that much sooner, and so that other similar improvements also could follow more quickly. However, I think you will agree this has seldom been done in public power. It has generally been the practice to sell the power on a preference basis and at costs that did not include many taxes and often did not consider interest as well. Such steps were justified by some who claimed that the electricity should be sold at a price which avoided these usual burdens, in order that the cheaper power would aid in stimulating the economy of the area involved. We will discuss this point further later on.

From all the above it is evident that the apparent great benefit that results in lower electric rates in these public power areas is only indirectly and partly the result of hydro operation, but instead is primarily the result of avoiding taxes and other burdens which the great majority of other areas must carry and make up for. Furthermore, many of the large public hydro installations, if figured on a comparable basis as for a steam plant at the market, would show little if any saving, especially if reliability and continuity of service are considered. *We are therefore face to face with the inescapable fact that the problem is not one of engineering but one of political philosophy.*

Political Philosophy Involved

The question is, "Should these apparent great advantages of avoiding interest and taxes be continued in the future for people in certain areas adjacent to publicly-developed hydro sites, and should this policy be extended?" Of course the people in the so-called "benefited" areas that are now avoiding their fair share of costs *are* fighting and *will* bitterly fight for the continuance of their special privilege. But does that make it economic or in the general public interest, especially when it tends to break down the system of incentives and fair play on which our whole economy is built, and which, as explained earlier, can be so easily thwarted and poisoned?

Let me explain further why these seemingly unfair conditions have been allowed to develop in the past. In the early days of this country, as well as during the depression, certain limited run-down or undeveloped areas were granted the subsidy of tax avoidance for definite reasons. The early days of the railroads and the TVA are examples. Some of these public power programs were born in the depth of the depression in an effort to "prime the pump" in those areas whose local economy was below that of the rest of the country. At those times taxes were relatively low and areas tended to exist unto themselves, since transportation facilities were relatively costly and difficult. Under such conditions it was accepted by some that

certain less developed areas should receive subsidy through the avoidance of taxes and interest, to help them grow and raise their standard of living, to develop new territory, etc. The general public was not then concerned or aware that those privileges could later threaten the national economy or our form of government.

However, modern means of transportation—air, bus, auto, rail and water—modern communication and modern availability of energy with mass production, together with the ease of shifting location, have completely changed the picture. Modern roads and thruways and the auto, and even trailer homes, enable workers to easily move from one location to another. Taxes, that formerly were a small portion of the cost of things, have both grown and multiplied, and now constitute a tremendous burden on all enterprise and development. As a result, each area now tends to compete with other areas for business in the national markets, as well as for the industries themselves.

Therefore, under present conditions, if our national economy is to grow and prosper, it would seem that we must have equality of opportunity and equality of taxation. We must not have certain groups or areas avoiding their fair share of the tax burden of the country, enticing industry from other areas and competing with business outside their area.

A typical example is the "Niagara Issue" in New York State. We now find the governor claiming that our industries in a fully-developed area like New York State cannot meet the competition of those areas that are avoiding their share of interest and taxes, and for this reason he claims that the state must develop the additional power at Niagara. Thus it is clear that the cancer of tax avoidance which now exists in only certain limited areas totaling some 12 per cent of the country, if not now stopped dead in its tracks, cannot help but grow and engulf the whole country. If we are not careful now it will soon be too late.

Why Problem Is Important

If the customers of public power in New York State or in other localities are to be given preferential treatment, why not allow taxes to be dodged in the stricken coal areas of Pennsylvania and West Virginia? If coal avoided taxes, why not oil and all minerals? Where does the chain reaction stop? Who will pay the lost taxes? The answer is that the overall tax burden on other areas becomes that much greater, and collapse of the American free enterprise system is inevitable. We must think these things through. Lincoln said, "No nation can exist half free and half slave." Likewise, neither can our economy thrive if some groups avoid taxes and other areas are forced to carry more than their share.

Discriminatory Effect

While avoidance of taxes in a certain area may help that particular area, we must consider the "drowning" effect on all enterprise in other areas that are forced to carry more than their share of taxes.

It would seem that the time has come when this discrimination and subsidization should not be extended further and that such special privilege to a relatively few should stop. If such is not done, there will eventually come a time when the public power industry would have to assume its full burden of the tax costs of government. Under these conditions the whole fallacy of alleged government cheap power would be exposed, just as it has been exposed in France and England. However, the pathetic part is that it would then be too late. I would again emphasize that if there were complete tax equality there would be no public vs. private power issue. In fact, you will recall that many proponents of public power have admitted they cannot exist without the subsidy of tax exemption.

I believe you see now why I am so concerned. If these subsidies are extended further in areas that are fully developed, then every other state in the Union is entitled to do the same thing, and socialization of the electric industry in this country just cannot be stopped.

Some have claimed that these power programs are not leading our economy toward socialization of the industry. I hesitate to use the word "socialism," and do not use it as an accusation, as I know the majority of those who favor public power do not favor socialism, nor do I think that they want to see our country go socialistic. Nevertheless, Norman Thomas, who seems to me to be a pretty good judge of socialism, said just within the last few weeks: "The advocacy of public power does not of itself make a socialist, or the practice of it constitute socialism. But of course the principle behind public development of power is socialistic, and it is rather childish to deny it."

As we see it, either the whole power industry of the country should be allowed to avoid taxes and interest, or they all should carry their fair share of these burdens. If the power industry is to avoid taxes, why not transportation? Why not food? Where will it all stop? We in the private utility business do not ask for special privilege—we feel that the people benefited from such programs should carry their fair share of the tax burden and not ride on the backs of others. We must begin to share the tax burden equally, not *avoid* it.

Other Claims of Public Power

The following points have frequently been given for justifying public power programs. Let us analyze them:

a. Some have claimed that public power programs are necessary in order to provide a yardstick to measure the reasonableness of electric rates. I trust you will see from the preceding discussion the folly of such reasoning. If a yardstick is to be used it must be 36 inches long. Such arguments can only lead to indignation and bitter feeling, and are absolutely no excuse in the problem.

b. Some few have claimed that public power programs are necessary because regulation of private utilities in the public interest has broken down. However, this argument always bothers me because if it is claimed that the public authorities (namely, the various regulatory commissions) cannot regulate successfully, how can public authorities be expected to operate such a program successfully? Furthermore, I call your attention to the curves in Fig. 1 showing the continuous decline in the cost of residential electric service in recent years in spite of the doubling of the cost of living during these past 30 years. Such results certainly could not have been achieved if regulation were as ineffective as some would lead us to believe. We in the industry, under regulatory commissions, know first-hand how vigorous and stern are regulatory procedures. Yet we realize that in return for the franchises entrusted to us, reg-

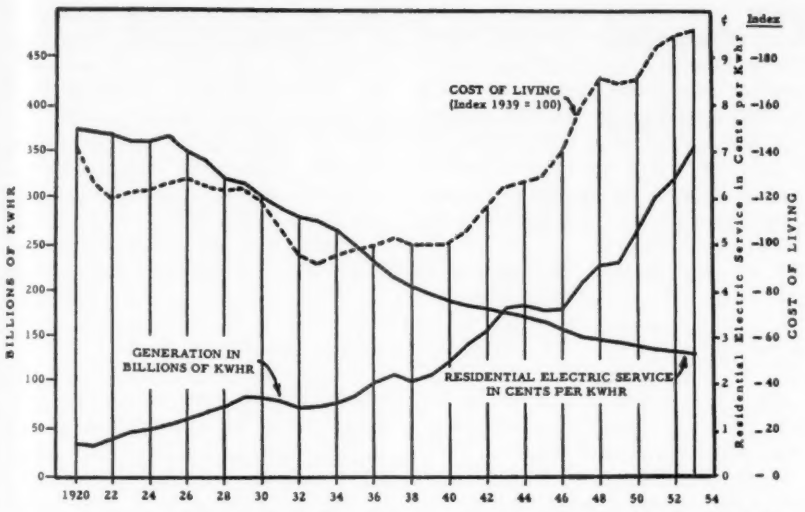

BILLIONS OF KWHR
Residential Electric Service in Cents per Kwhr
COST OF LIVING
Index
COST OF LIVING (Index 1939 = 100)
GENERATION IN BILLIONS OF KWHR
RESIDENTIAL ELECTRIC SERVICE IN CENTS PER KWHR
1920 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54

Fig. 1—Private Electric Utility Industry—Total Generation, Cost of Residential Electric Service, and Cost of Living

ulation is necessary, and we welcome strong regulation. Our only qualification has always been that it should be fair to the consumers and the investors alike.

Sometimes it has been claimed that the phenomenal result in the constantly decreasing cost of residential electric power shown in Fig. 1, has been brought about because of the competition of public power programs. A glance at the chart, however, will show the fallacy of this argument. Residential electric costs have consistently declined, and the introduction of public power programs in the early Thirties had absolutely no effect on this already-established trend.

c. One other factor that impresses the private power industry as being most unfair is the insistence of those supporting public power programs that they continue the so-called "preference provisions" under which the power from public power plants must be disposed of on a priority basis to municipalities, co-ops and other tax-avoiding groups, even though they may be located farther away, often at uneconomic distances. I'm sure you will agree with us that such provisions are primarily for political advantage and can only lead to further socialization of the power business. As each area becomes so privileged to avoid taxes and other burdens, other areas in defense are forced to say "Me, too!" It seems to us that such a policy no longer has any purpose in America as it exists today. We might even say that if any preference is to be given, it seems that it should be to those taxpayers who have helped to put up the money, and not to those who avoid their fair share of taxes. But again I say—all that the private power industry asks for is equality.

d. Another development of some public power programs impresses us as having doubtful value in the public interest. Recently, in their desire to avoid some of the criticism of "living off" taxes from other areas, they have suggested financing their programs through the issuance of tax-exempt bonds. The New York Power Authority recently issued $335 millions in tax-free bonds for the St. Lawrence power development, and was proud of its achievement as being in the public interest. Who bought those bonds? A person with a $50,000-a-year income would buy those bonds in preference to a business investment that would yield 13 per cent —another case of tax avoidance by a group that generally should carry their share of taxes, thus again benefiting a few at the expense of the many under the guise of public interest. These lost taxes, of course, must be made up by others.

Tax-Exempt Securities

I was interested to read in a new book by Professor Vernon Mund of the Economics Department of the University of Washington in Seattle, entitled "Government and Business," a very interesting statement on this same subject. While I cannot agree with some of the points he raised in his book in defense of public power, I cannot help but applaud when he said:

> The main argument for the issuance of tax-exempt securities is that a governmental body is thereby able to borrow at lower rates of interest. This argument is undoubtedly true. With a system of progressive income taxes, however, the loss in tax revenue from persons with high incomes who buy such securities possibly is much greater than the saving in interest cost. A glance at the advertisements for tax-exempt securities will show that persons with high incomes investing in tax-exempt securities possibly are able to secure a higher net return on their capital than persons of moderate means who buy defense savings bonds. The practice of tax exemption may consequently serve to benefit persons of wealth more than the borrowing public. Tax exemption, therefore, does not appear to be a sound policy with the steep progressiveness in federal income tax rates which presently exists.

In older days we all know there were many crimes committed in the name of religion. When I hear some of the claims of public power programs I feel that the modern version is to commit economic crimes in the name of "public interest."

Results Under Private Operation

Now let us look at the other side of the picture and see what privately-owned utility operations under regulation have to offer that would seem to be in the public interest.

Under private enterprise the following benefits automatically result:

a. *Everybody is treated the same.*

Private enterprise, under regulation by the Public Service Commission, supports the principle that the people benefited carry their fair share of the tax burden and do not become a burden on other taxpayers, and that everyone is treated the same. Under private operation the license fees for the use of the water for hydro power and the taxes paid mean that all the taxpayers share in the benefit and no special privileges are conferred on a few at the expense of the many. In other words, all the citizens share in the benefit from the development, not just those who happen to live within transmission dis-

tance from the electricity developed.

b. *Electric service at lowest cost to customer.*

The customer gets his electric service at the lowest cost when all costs are included. It must be remembered that under regulation by a Public Service Commission, there is no "profit" as the word "profit" is usually understood. Such operations are on a strict "cost of service" basis, and only enough is allowed to be collected to pay the operating expenses, taxes, and a fair return on the money invested less depreciation, as interest on the money put into the business by the public.

c. *Operations are controlled in the public interest.*

The operation under private enterprise is controlled in the public interest by an organization above and beyond the companies: namely, the Public Service Commission. Under government operation, where is there any agency to check and prevent wasteful operation, special privilege, or politics in this important service to the people?

Under public operation there is apt to be eventually created a powerful political influence under the sole supervision of the sovereign discretion of its appointed office-holders without redress or appeal.

Other Factors

In view of the discussion given above, we are now in a position to consider some of the points that have recently been made on this subject.

a. Private operation has been accused of being greedy and desiring to "make a grab," moved by the desire to make an undue profit for a few at the expense of the many. Let us see what the facts are. Proponents of public power are prone to claim that such water resources belong to all the people and should be used for their benefit, not just for a few. But under public operation isn't just the reverse of this objective achieved? Public power in reality gives preference to certain groups near the development at the expense of the many, while private operation, through the taxes paid by those benefited and the license fees paid for the right to use the water, really benefits all the people through lower taxes, not just a few who live nearby.

Therefore, from all the above it seems clear that commission-regulated private operation of such developments as we are here discussing, in reality brings the benefit of these natural resources to "all the people" to whom they belong, and not just to a few. It would seem that private operation better achieves the objectives that many have claimed were the aims of public power.

b. As our country develops automation with the use of electric power, the factors discussed above become of increasing importance. In a truly automatic world, power is the mainspring, and certain areas should not have this vital necessity at a discount while others are penalized.

At the present time the cost of electric power in most industries is but a small fraction of 1 per cent of the value of the finished products, and in the home it represents less than 1 per cent of income of a family. The points I have discussed may not have been so important in the past, but today and as time goes on they will become increasingly important, and now is the time to correct them before it is too late.

c. Some proponents of public power have claimed that tax acceleration provisions of recent laws have given tax advantages to private operation. But here again it must be remembered that such taxes (as are temporarily delayed in payment) must later be paid back and perhaps in increased amounts. It is a gamble that each company takes. However, such benefits (if they really *are* benefits) are available to all, not just to people in certain areas, and thus everyone is being treated the same. Again I would emphasize that such taxes are not excused; they are merely delayed, so as to help the industry throughout the whole country expand and prosper. This is quite different from giving special benefits to certain groups.

What Does All This Mean?

Thus it is clear that while cheap power is a great benefit to a community (which I don't deny if it really *is* cheap), nevertheless we should be careful not to set up conditions that tax the existing purveyors and users, and thus be misled into spending taxpayers' money to build facilities that escape those taxes.

Conclusions

From all the above, you can readily see why I feel we are here considering some very important factors, and why under present conditions I am concerned as to the future of our country. Under the guise of public interest, some public power policies are now in vogue that impress me as actually having the opposite effect, since they tend to benefit a few at the expense of the many through the avoidance of taxes and other burdens which the rest of the country must carry and make up for. The following points would seem to be worthy of careful consideration:

1. The absence of a cost for fuel in hydro power operations generally represents from 10 per cent to 15 per cent of the cost of delivered power, and there may be some justification for the people adjacent to such developments receiving this benefit in their power bills. However, in addition they should not be allowed to avoid part or all of the tax charges and investment costs which total nearly 50 per cent of the delivered power costs in other competing areas.

2. While certain interpretations and provisions of public power programs may have had some justification at the time they were conceived, under present-day conditions they have outlived their intent and usefulness and give undue preference to people in certain areas and actually defeat the very objective on which they were originally based. They should be revised.

3. When private enterprise does not stand ready to develop natural hydro resources, either as part of multi-purpose projects or otherwise, we cannot criticize government for stepping in and doing the jobs which are economically sound. However, if done, such power, whether by-product or otherwise, should be sold at a fair price including its share of the tax and interest burden, thus giving the benefit to all, and not to only a few.

4. Power from flood control and other multi-purpose projects must not be made to appear cheap by avoiding burdens which all other enterprises must carry. By selling such power at its fair cost, the collateral benefits of multi-purpose projects will be paid for that much quicker, stimulating further reduction in taxes and expansion of our economy.

5. The "preference" provisions of present public power programs, which benefit groups who also avoid taxes, completely defeats the objective of

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The Adequate Wiring Can and Will Be Done . . . Commonwealth Edison's Program

By John W. Evers
President, Commonwealth Edison Company

An address before the 11th Annual National Adequate Wiring Conference, Chicago, Ill., February 24, 1955

ALL of us in the electric utility and allied industries know from bitter experience that we have a tough job ahead of us—a job that we are not going to be able to lick this year or the year after or even in the next several years.

The wiring systems in most homes are like the single-lane, dirt roads of yesterday—built for horse-and-buggy travel and not at all suitable for the heavy automotive traffic of today.

The copper highways in most homes — in fact, in most occupied buildings — are single-lane, dirt roads when present-day electrical traffic is considered. They must be rebuilt for the electrical traffic of modern living.

A Mushrooming Problem

Inadequate wiring is such a big handicap to so many different groups that it is a little difficult to comprehend just how the problem mushroomed as it has.

The only answer, apparently, is that it costs money to correct the condition in existing buildings and to prevent it in new ones. And people are not as willing to spend money for concealed wiring as they are for more readily seen articles with glamor appeal like television sets, automatic washers — or fur coats.

Inadequate wiring hurts just about everybody but our friends in the gas business.

It hurts the homeowner, who cannot install new appliances or utilize efficiently and conveniently those he already has.

It hurts the appliance manufacturer, who finds the market restricted because prospective customers can't use his product.

It hurts the electrical contractor, who fails to get an almost unlimited amount of new business.

It hurts the producer of wiring equipment, who doesn't sell the new wire and related accessory fittings.

And, of course, it hurts us in the electric utility business, when we fail to develop, as rapidly and as fully as we should, the soundest and most stable kind of business we have —the residential load.

With all these interested parties having such an important stake in the solution of this problem, it would seem that the situation should automatically have corrected itself. But, sad to say, it has not.

With one exception, all of the groups I have referred to are represented at this Conference. Unfortunately, the one exception is the most important and the biggest of the groups involved—the people who finally must make the decision to do something about it, the homeowners. Nevertheless, it is encouraging that there is present such a broad cross-section of interested parties—for if ever there was a modern-day challenge to the whole electrical industry—adequate wiring is it.

When I looked over the program for the Adequate Wiring Conference and noted that it included contractors, utility people, electrical council and association members, equipment manufacturers, government representatives, rural engineers, electrical distributors, publishers, and real estate people. I knew that the Bureau also saw its job as involving all segments of our industry as well as many outsiders. In this singleness of purpose and unity of endeavor we will find the needed strength to meet the challenge.

The challenge may be obscured in the first quick glance at what has been happening in our industry and in the appliance field in the post-war years.

In the first nine years following World War II, the number of residential electric customers in the United States grew from 28 million to 42 million, an increase of 50 per cent.

Now, look at what happened to certain appliances in the same period. We thought the market for refrigerators was pretty well saturated years ago, but the number of homes so equipped grew from 19 million to 39 million in less than a decade.

Others are equally impressive.

Homes with electric washers increased from 17 million to 34 million, vacuum cleaners from 13 to 26 million, and coffeemakers from 10 to 23 million. All these appliances at least doubled.

Television, the newcomer, jumped from zero to 27 million.

And look at some of these heavy load appliances: portable heaters grew from 5 million to 10 million, water heaters from 1 to 6 million, and ironers from 2 to 4 million.

And here is the clincher which shows what people really want—in Chicago or elsewhere: ranges went from 3½ million to 11 million. That all makes a very nice picture, indeed. But where do we go from here?

Increase in Electricity Sales

We in the electric utility industry aren't looking for additional business just for the sake of increasing our gross, because if we look at total figures we have been doing pretty well ourselves. In the nine-year period we've been considering, electricity sales in the United States rose from 193 billion kilowatthours to 384 billion, or just about double.

The outlook indicates that electric utilities are going to keep right on growing. But over-all growth is not enough and not necessarily desirable in itself. What we want is a well-balanced load growth.

That is why the whole industry is so interested in adequate wiring.

That is why adequate wiring is becoming more and more a matter of concern. That is why it has come to be recognized as a problem deserving the attention of top management.

That is why Commonwealth Edison's top management decided to do something about it. And when I say do something, I mean to the tune of one million dollars or more to be spent over the next year or so on advertising, promotion, and home wiring improvements.

From time to time in the past, Commonwealth Edison, like many other utilities, has developed campaigns of varying intensities to counteract inadequate residential wiring. We now believe that the situation has reached such serious proportions that it constitutes a distinct challenge to any top utility management.

Home Wiring Modernization Program

So on January 1st we launched a new home wiring modernization program. Under it, 615,000 homes in Chicago and northern Illinois with outmoded two-wire 120-volt service are being offered special inducements to install three-wire, 240-volt service.

Commonwealth and its Public Service Company Division are dedicated to encouraging those living in one,- two,- or three- family dwellings to install the modern wiring necessary for good lighting and to handle today's growing list of appliances as well as to use more conveniently those they already have.

The company has arranged for "bargain priced" wiring by assuming the cost of the service entrance. This, heretofore, has been paid by the customer. Under the new plan, the company thus bears the cost of all the outside equipment. I should add, parenthetically, that we have placed a maximum of $35 on the amount the company will pay for service entrance equipment.

Any customer with a 240-volt appliance who agrees to install a 100-ampere main switch and the circuit required for the appliance will qualify for the service entrance concession.

Commonwealth has arranged for local electrical contractors in each community to make wiring installations at fixed prices. All appliance dealers have been furnished schedules of these installation costs so they have them instantly available for customers' information.

Full Benefit of Electric Service

Commonwealth Edison's Chairman, Willis Gale, in announcing the program, stated it was adopted so that residential customers can get the full benefit of today's electric service. He pointed out that last summer many customers bought room coolers but had to return them because their homes did not have sufficient wiring capacity to handle the appliance. I would like to repeat a few of his remarks:

"We hope to make our service territory the best wired of any comparable area in the country. We realize we can't do this overnight, but we are prepared to carry out a long-range program to bring it about.

"A healthy growth in the residential use of electricity is necessary to insure the well-balanced growth of our entire load. A well-balanced load is necessary to permit us to utilize our expanding generating and distributing facilities most economically and, in the long run, to the financial benefit of all our customers."

Choice of 240-Volt Appliance

The 240-volt electrical appliance required under the program may be a range, a clothes dryer, an air conditioner, a built-in auxiliary heater, or a water heater.

The wiring installation provided for in the program will permit the ultimate installation of up to ten 120-volt circuits, as well as the 240-volt service. This contrasts with the typical two-wire service with only two to four circuits now found in hundreds of thousands of homes in our area.

Those are roughly the details of the biggest wiring program in Commonwealth Edison's history. Now, the problem is how to get people to take advantage of it.

To help accomplish that, we are backing the program with heavy advertising support which already has begun. We are using the big Chicago dailies, plus 100 Chicago community and foreign language newspapers and some 200 other dailies and weeklies in our Public Service Company area outside Chicago.

We will also have television spots, radio commercials, bill boards, car cards, window and store displays, and dealer promotions.

On the first of this month we introduced a new Commonwealth Edison spokesman—Little Bill, a character who works for pennies a day.

Little Bill, as part of his job, will be selling the benefits of wiring modernization in all the advertising media previously mentioned.

Little Bill, and most of our advertising, will attempt to sell adequate wiring by selling the glamor of the modern electric range, or the work-saving convenience of the electric dryer. Little Bill says:

I'll cook your food . . . for pennies a day.

I'll dry your clothes . . . for pennies a day.

I'll cool your house . . . for pennies a day.

Initial Results

You will, perhaps, be interested in the results of the first six weeks of the new program. As all of you have learned, a promotional effort of this type almost invariably starts slowly and then, if it works according to plan, picks up momentum as it progresses.

Since the first of the year we have been busy educating our own 16,000 employes and the 1,500 dealers and distributors in our territory on the mechanics and details of our program. We believe today that this part of our job is well under way.

Now as to the initial results. We are now giving an average of 100 rewiring installation orders per week to contractors. Of the total number of wiring requests, 35 per cent arose from the sale of ranges and 35 per cent from the sale of dryers. It may be of interest to you that about one-third of those who are rewiring are taking advantage of our monthly payment plan.

Water heaters, built-in space heaters, and air conditioners, thus far, have played a less important role. We believe, however, that when a twelve-month cycle is com-

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The Credit Picture

Results of Survey Conducted under Joint Supervision of the Customer Collections Committees, EEI Accounting Division and AGA Accounting Section

COLLECTION results as disclosed by the Credit Picture data for the last six months of 1954 compared to a year ago are showing about the same trends as was revealed in the report for the period ending June, 1954. The rate of increase for total net losses since June, 1954, has declined a bit, but the change in outstanding accounts receivable balances has worsened appreciably.

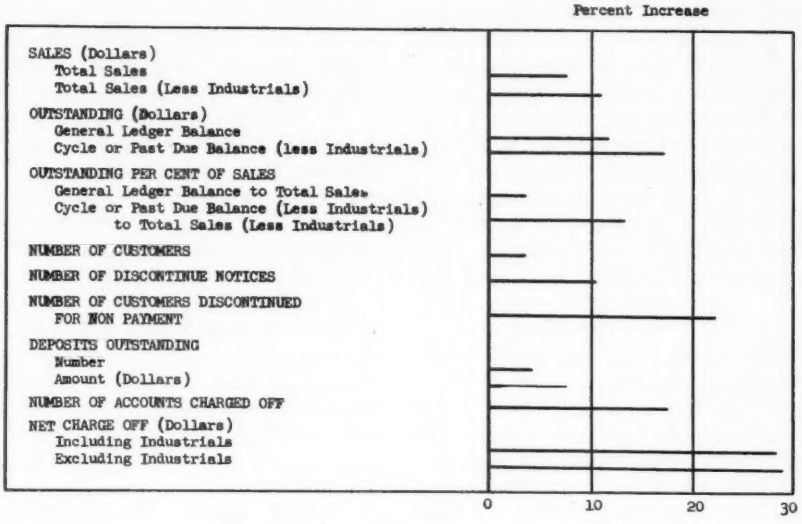
During the past three six-month periods ending in December—1952 to 1954—the growth in sales and customers show consistent increases of about 8 per cent and 3½ per cent respectively, while the principal collections indices have fluctuated as shown in the table at right.

The data for the current report was supplied by 81 companies. Some of the more significant trends were:

Only 10 companies could report a decrease in the number of Discontinue Notices issued, and three of these were reported as due to changes in policy.

14 companies disclosed increases of over 50 per cent in the number of customers disconnected for non-payment, with two of these companies indicating over 100 per cent increases. 85 per cent of the companies reporting on this item showed greater disconnect totals than last year.

CREDIT AND COLLECTION EXPERIENCE OF U. S. ELECTRIC AND GAS INDUSTRIES
July 1, 1954-December 31, 1954, compared with same period for 1953



	1952	1953	1954
Cycle Balance Ratio to Sales	+ 0.3%	− 3.8%	+ 3.7%
Number of Discontinue Notices	+ 5.4%	+ 2.6%	+10.3%
Customers Disconnected for Non-Payment	+10.4%	+15.4%	+22.1%
Deposits Outstanding—Dollars	+ 6.3%	+ 4.9%	+ 7.5%
Net Charge Off—Dollars	+21.5%	+24.5%	+28.3%

62 companies disclosed an increase rate of net charge-off in excess of the rate of growth in sales.

29 companies had net losses in excess of 50 per cent over 1953, including 11 companies whose losses jumped over 100 per cent.

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REFLECTION OF THE CREDIT AND COLLECTION EXPERIENCE OF UNITED STATES ELECTRIC AND GAS UTILITIES—JULY 1, 1954, TO DECEMBER 31, 1954

Per Cent—Increase or Decrease over Corresponding Period—1953

	New England	*Middle Atlantic*	*East North Central*	*West North Central*	*South Atlantic*	*East South Central*	*West South Central*	*Mountain*	*Pacific*	*Total United States*
Sales in Dollars:										
Total Sales	+ 3.7	+ 4.9	+ 6.9	+12.2	+10.2	+11.0	+13.1	+ 7.7	+ 8.3	+ 7.8
Total Sales (Excluding Industrials)	+ 5.9	+ 7.5	+11.6	+15.1	+12.0	+13.5	+17.1	+ 9.7	+ 8.2	+11.1
Outstanding in Dollars:										
General Ledger Balance	+18.0	+ 4.3	+17.4	+15.0	+11.9	+ 6.0	+ 5.1	+ 6.3	+11.4	+11.7
Cycle or Past Due Balance (Excluding Industrials)	+35.4	+21.6	+22.4	+13.8	+41.0	+15.9	+17.1	− 4.4	+ 5.8	+17.2
Outstanding Per Cent of Sales:										
General Ledger Balance to Total Sales	+13.8	0.0	+ 9.5	+ 2.6	+ 1.9	− 4.6	− 7.1	− 1.2	+ 2.8	+ 3.7
Cycle or Past Due Balance (Excluding Industrials)	+24.2	+22.2	+11.1	+ 1.8	+27.0	0.0	0.0	−11.5	N.A.	+13.2
Number of Customers	+ 1.1	+ 1.3	+ 2.5	+ 3.2	+ 4.2	+ 4.4	+ 3.3	+ 4.9	+ 6.3	+ 3.4
Number of Discontinue Notices	+ 2.9	+ 8.6	+23.6	+18.0	+ 6.2	− 0.6	− 3.6	+19.8	+23.6	+10.3
Number of Customers Disconnected for Non-Payment	− 3.5	+16.2	+40.0	+27.9	+25.8	+24.4	+14.8	+ 8.9	+29.7	+22.1
Deposit Outstanding:										
Number	+17.8	+10.2	+ 3.1	+ 9.1	+ 3.3	−58.6	+11.9	+ 6.1	+12.4	+ 4.0
Amount (Dollars)	+ 1.2	+10.1	+ 7.0	+ 7.5	+ 9.9	− 4.4	+ 4.8	+ 3.5	+14.9	+ 7.5
Number of Accounts Charged Off	+18.1	+13.1	+37.8	+17.8	+29.8	+16.9	+10.1	− 2.0	+10.0	+17.6
Net Chargeoffs in Dollars:										
Net Chargeoffs (total)	+47.8	+19.8	+66.3	+64.9	+30.2	+ 3.0	+15.8	+21.8	+ 9.6	+28.3
Total Chargeoffs (less Industrials)	+ 9.2	+19.6	+69.9	+18.6	+24.1	+11.7	+14.6	− 2.8	+11.1	+28.9

Street Tree and Utility Conference Convenes in Cleveland

THE first nationwide Street Tree and Utility Conference, held March 3-4 in Cleveland, Ohio, under the sponsorship of the Edison Electric Institute, Illuminating Engineering Society, and National Shade Tree Conference, brought together for the first time some 300 arborists, lighting engineers, telephone and electric utility representatives, and municipal officials.

Long-Range Plans

The conference was devoted primarily to long-range plans that will provide for cooperative coexistence of shade trees and utility installations to the benefit of municipalities throughout the country. The over-all problem was dramatized by the 1954 hurricanes which brought damaged, over-age, and disease-ridden trees down on utility lines along the Eastern coast, thereby depriving thousands of customers of electric service for extended periods of time.

Through general agreement on both objectives and means of achievement, the three groups represented at the conference demonstrated confidence that tree problems can be solved progressively through mutual cooperation and concentration on a program to promote public acceptance of planned tree planting.

Former Senator Thomas A. Burke of Ohio was the first speaker at the conference. John W. Anderson, Philadelphia Electric Co., co-chairman of the conference representing the EEI, presided at the opening session.

John L. Rego, Director of Agriculture and Conservation for the State of Rhode Island, said the 1954 hurricanes brought the first serious thoughts about shade trees to many men in public life. Noting that we must sit down with experts and work out a long-range program designed to remove "giants of destruction" from our streets and to replace damaged and diseased trees on a continuous basis, Mr. Rego said that it is to the utilities' advantage to take the lead in such programs. Unquestionably utilities which go into this field will save money later in tree trimming costs, he added.

"The Cultural, Aesthetic, and Historic Background of Tree Use Along Streetsides" was discussed by Charles Young, City Forester, Baltimore, Md.

A paper by David Baldwin, National Safety Council, but read by Stanley T. Siegel, stressed the importance of adequate street lighting. The natural function of street lighting is to reduce crime and accidents and promote civic pride, but no street lighting installation is properly designed or installed unless it has been coordinated with trees. Nor is street lighting properly maintained unless trees are properly maintained.

Overhead Lines on Public Streets

A substantial contribution to mutual understanding of "Why Overhead Lines on Public Streets?" was made by George E. Dean, Public Service Electric and Gas Co. The answer, he said, is "because it is the best engineering solution." The hard economic facts are that pole lines on public streets cost less to build, can be maintained at less cost, and can be restored to service easier and more quickly than those on rear lot lines.

Pointing out impractical aspects of underground lines, Mr. Dean noted

Delegates to the first nationwide Street Tree and Utility Conference, held March 3-4 in Cleveland, Ohio, are pictured above at the dinner meeting. The speakers' table is shown in the rear of the picture.

it would cost an estimated $1.1 billion to put underground all 9400 miles of his company's overhead circuits. An additional $15 million annually would be required to reinforce such circuits. These investment and maintenance charges could be supported only by monumental increases in electric service rates, Mr. Dean said.

Problems and Limitations

The afternoon session on the first day was devoted to discussion of the problems and limitations in the design of the various utility services. W. H. Edman, Holophane Co., and H. W. Osborne, City of Buffalo, made a joint presentation outlining standards of design and permissible departures for effective street lighting. They pointed out that proper pruning of trees can improve the effectiveness of a street lighting installation from one-third to one-half. Such gains, they said, are most important in residential streets where high mounting height and wide angles of cutoff are necessary for economy of first cost. When street lighting and foliage clash, careful cost analysis is vital. It is far more economical to prune tree foliage than to alter street lighting design. Moreover, only about 50 per cent of street lighting mileage is in areas where foliage interferes, they said.

Power Line Design

Principles and limitations of power line design were discussed by E. V. Sayles, Consumers Power Co. He urged co-operation between utility designers and the arborists or foresters through the exchange of information covering:

1. Long-range planning of overhead systems and circuit locations.
2. Short-range planning of overhead construction in relation to trees.
3. Character of overhead circuits.
4. Clearance between trees and wires.
5. Effect of pole height on cost of construction.
6. Limitations on pole locations.
7. Limitations of high-voltage aerial cable.

Exchange and discussion of such information would be certain, Mr. Sayles believes, to establish a spirit of cooperation and a recognition of problems and situations previously unknown.

Other speeches at the Thursday afternoon session included "Coordination of Telephone Lines with Street Trees," by F. Woodland, American Telephone & Telegraph Co., New York, and "Sub-Surface Problems of Trees and Utility Structures," by S. S. Baxter, Commissioner of Water, City of Philadelphia, Pa.

The Illuminating Engineering Society's co-chairman of the conference, Kirk M. Reid, presided at a dinner meeting held on Thursday evening. In a speech entitled "Selection and Use of Trees to Minimize Public-Area Conflicts," Edward H. Scanlon, consulting arborist for The Cleveland Electric Illuminating Co. and editor of *Trees*, said that the huge cost of removing and replacing trees killed by Dutch elm disease today is a major financial burden for cities. But at the same time they have an opportunity to start a planned tree planting program, he told the conference. Mr. Scanlon urged that the public be educated away from forest giants and toward trees of the right kind, shape, and size for the space available. He illustrated his remarks with color slides showing species suited to street planting and examples of streets where planned planting has provided attractive foliage without conflict with overhead lines.

Presiding over the Friday morning session was Mr. Scanlon, conference co-chairman for the National Shade Tree Conference. This session featured examples of planning, coordination, and education. C. Elmer Lee, Southern California Edison Co., reported that a booklet, *Trees*, published by his company, was distributed to 15,000 persons last year and will reach 50,000 in 1955. It is used in Los Angeles schools which have classes in horticulture and agriculture.

Tree Planting Ordinances

A paper by E. G. Stahl, Pacific Gas and Electric Co., stated that 34 of 156 incorporated municipalities have adopted tree planting ordinances as a result of PG&E's selective tree planting program. Forty-eight more municipalities have them under consideration. Most of the company's promotion in the last 16 months was directed, Mr. Stahl said, toward passage of such ordinances in every community served. These ordinances contain provisions that the PG&E recommended tree list be adopted exclusively and for a program of removal of undesirable trees.

A program of cooperation which makes services of a company's consulting arborist available to any community it serves which wishes to develop master street tree plans was described by Harry T. Sealy, Vice President, The Cleveland Electric Illuminating Co. The cooperative plan also offers a complete tree program including expert aid in setting up means and techniques for organizing and financing such programs, model legislation, master plannning program, a maintenance plan for new and old plantings, and organization of basic equipment needs.

Selection and Location

J. A. Dietrich, Superintendent of Trees, Greenwich, Conn., stated that the time has come to review conceptions of street trees. Wisely selected trees, properly placed and well maintained, can be an asset, he said. Mr. Dietrich told the conference that wires and trees can live together if consideration is given to species selection and planting location.

Other speakers at the Thursday morning session included F. J. Schmitt, Rochester Gas and Electric Corp.; D. A. Toenjes, General Electric Co.; H. W. Bassett, Assistant Engineer, Town of Brookline, Mass.; R. Hicock, The Connecticut Light & Power Co.; G. J. Vaupel, New Jersey Bell Telephone Co.; G. D. Blair, Forestry Consulting Service; and J. A. Sweeney, City Forester, Toledo, Ohio.

Panel Discussion

The final session on Thursday afternoon was devoted to a panel discussion by all conference speakers. Professor H. O. Perkins, University of Connecticut, presented a conference summary following the discussion.

The conference was imbued throughout by a cooperative atmosphere. Because this meeting is believed to be of tremendous potential value to utilities in improving service continuity and reducing operating costs, there is a possibility that a similar one will be scheduled in the future.

Engineering Opportunities

(*Continued from page* 114)

But in addition to the opportunities in research and scientific development, there are still other attractions for engineers and other professionals in the electric utility industry. To any young man looking for a field in a vital public service in which to demonstrate his skills and talents, the electric utilities have plenty of challenge. Probably no field has better intra-communication as I have indicated. Information on the technical progress made by any company today is available before tomorrow to any other. Likewise, the troubles experienced by one are known to others almost immediately so that protection against repetition of adverse experience can be provided in the least time. Accordingly, progress in overcoming technical difficulties is rapid. Much of this progress comes from the fine interchange between the engineers of the utilities and the manufacturers, both officially, through buyer-seller relations, and through the great engineering groups such as this one.

Literature Sources

To get a better idea of the sources of the technical advances which are being made in the electric power field, I have counted up the sources of the literature which was published on power subjects during 1954 in the official publications of the AIEE, the ASME, ASCE, and the American Power Conference. Of 88 *individually* authored papers published, 52 came from manufacturers, 14 from utilities, eight from colleges and universities, eight from government agencies, and two from research groups. Of the 36 *jointly* sponsored papers, 16 came from manufacturers, 14 from utilities, three from universities, and two each from consultants and from research organizations.

As evidence of the unlimited opportunity and recognition for the engineer in the utility industry, I had a count made of the general officer positions of 82 of the larger utilities throughout the United States. From the available information it appears that of 788 such officers, 300 or 38 per cent are engineers. In my own company, there are approximately 250 engineer-trained men, of which more than 50 are superintendents and division or department managers; six of our 12 senior officers are engineer-trained.

From daily association and work with utility engineers, I have observed that they are a willing, able, and imaginative lot. In my opinion they have done and are doing an outstanding job. They will continue to maintain their technological advances so long as a political and economic atmosphere exists which permits individuals to express their creativeness.

Adequate Wiring

(*Continued from page* 122)

pleted, air conditioners will have been responsible for much of the rewiring resulting from the plan.

When the mercury plays hopscotch with John Q. Public's disposition, air conditioners will be installed in great numbers, even if a wiring change is involved. We found that out last summer. We feel that the aid afforded by our wiring program will prove an added inducement.

I wanted you to have the first results of our program to show that, finally, it begins to look as if people may be ready to lick the wiring problem. The drive is really catching on.

If I have given the impression that Commonwealth Edison is pioneering in this field, I want to correct it. We are by no means alone, and we are by no means the first. We are one of many companies that are aggressively out to break the bottleneck of inadequate wiring.

Local electric associations, representing the cooperative efforts of utilities, appliance manufacturers, dealers, electrical contractors and others, are out to keep the ball rolling.

So I think we can all take heart, and at the same time make a firm resolve that we won't quit until the job is done.

It's going to take a lot of money. It's going to take a lot of effort. It's going to take a lot of time. But the job can and will be done.

The effort we make today will insure that all America can enjoy the Electrical Age tomorrow.

Public Power Programs

(*Continued from page* 120)

benefiting all the people, and should be eliminated. Everyone should be treated the same.

6. Under modern conditions, with each area competing with other areas not only for markets but for industries as well, certainly our economy has reached a stage where avoidance of taxes and interest by certain groups should not be expanded further. If our economy is to grow and prosper we should strive for *equality of opportunity* and *equality of taxation.* Efforts should be made to correct the situation before it is too late, while it involves only some 12 per cent of the country. If expanded further in fully-developed areas, then every other area and every other industry is entitled to do the same thing. Then where will taxes come from?

The above principles are substantially identical with the findings in the splendid study on this subject submitted a year or two ago by the Engineers' Joint Council. We should do all we can to support them. These principles are also in accord with the recent "partnership" recommendations of the Administration, who have taken a courageous stand in this matter, and which as time goes on we feel will clearly demonstrate their wisdom as being in the public interest.

I should emphasize to you that this issue is a national one, not just a local one, involving the areas where these problems are now being actively considered. In our zeal to develop certain natural resources and get all the benefit we can for them, we must adopt sound reasoning and not set up special privilege that endangers the future of our country by violating the principles of our economic system that have done so much to make this country great. We must be alert not to tear down the incentives of our system, by using and developing a modern version of the plunder system that can only lead to the disintegration of our American free enterprise system.

It is for all these reasons that we are here involved in matters that I feel can have a tremendous influence on the paths this country will take in the future. If we see clearly and act promptly, our system of society may yet be preserved.

15th Indiana Young Men's Utility Conference Attracts 200 Delegates to Indianapolis

HOLDING aloft a dime, R. J. Kryter, Indianapolis consulting engineer, set the stage for a forceful presentation about atomic power at the 15th annual Indiana Young Men's Utility Conference held April 6 and 7 in Indianapolis, for which Indianapolis Power & Light Company was host.

He said, "If we could extract all the energy out of this dime, we could lift the Empire State building 52 miles." Then, in jest, he flipped the dime at his audience saying "You take it. It scares me."

More than 200 young men from six Indiana utilities heard Mr. Kryter go on to explain the past history of the atom, but his predictions for the future evoked most interest.

He stated that atomic power capacity in this country will grow rapidly and be competitive with coal burning plants by 1960. With the raw material supply of uranium doubling every six months, he said it's reasonable to expect a kilowatt capacity of 12 million by 1970, 42 million by 1980, and 100 million by 1990, all from atomic power sources.

Referring to present day uses of atomic power, Mr. Kryter said the Navy's atomic-powered submarine is believed capable of circling the globe under water in 29 days. Its actual speed is still a closely guarded secret. He added that most aircraft manufacturers think we will see atomic-powered planes, capable of speeds up to 800 mph, by 1960.

Mr. Kryter cautioned, however, that in every known method of atomic reaction, we get only heat; thus, the only change atomic power will make in utility systems will be to replace the boiler. In closing, he pointed to the day in the distant future when we might be able to get power direct from the atom.

Welcoming the Indiana delegates, all of whom were under 35 years of age, was H. T. Pritchard, President of Indianapolis Power & Light Co. Mr. Pritchard and J. C. Hill, Fort Wayne Division Manager of Indiana & Michigan Electric Co., pointed out that the future holds considerable promise for young men in the utility industry. Mr. Hill is vice-president of the Indiana Electric Association, sponsor of the conference.

Also dipping into the future, J. H. K. Shannahan, Commercial Manager, Indiana & Michigan Electric Co., presented a concrete explanation of electric space heating. In the northern Indiana and southern Michigan area served by his company, Mr. Shannahan said, interest is centered in electric resistance heating. When Indiana & Michigan decided to push electric space heating, they found few dealers handling the necessary equipment. The company's promotion program aroused the needed interest among dealers as well as among builders, with the result that 637 homes had electric heating installed in 1954, bringing the total electrically heated houses in the company's service area to over 1,000.

Mr. Shannahan was quick to emphasize that these were not luxury homes, but rather average dwellings with from 1,000 to 1,200 sq ft of floor space. Eight per cent of all new homes in Indiana & Michigan's territory include electric heating, one of the reasons being that a budget billing arrangement has been devised whereby a customer can pay all year on electricity used for heating during the cold winter months.

Mr. Shannahan said that the "extras" of electric resistance heating are of primary importance in its sales story. These he listed as no floor space is devoted to the furnace because heating panels are installed in the walls and ceilings, perfect individual heat control is possible, no soot or grime accumulates because no combustion occurs, and there are no moving parts or noise connected with resistance heating.

A presentation by Ralph Young, Safety Engineer for Public Service Co. of Indiana, Inc., is summarized in his own phrase, "Any inanimate object plus a careless man is an accident machine."

The second day of the conference was devoted to a General Electric program, which was a shortened version of a similar presentation made last year for utility executives at Association Island. Eleven GE representatives, led by S. J. Tombaugh, Manager of GE's Indianapolis Apparatus Marketing Division, took their audience to the year of 1964, via slides, movies, and prepared scripts. They discussed the prospects for the electric industry in 1964, touching on the problems of generation, transmission, and distribution of electricity.

Serving on the conference arrangements committee were Donald E. Blue, Chairman, Indianapolis Power & Light Co.; Norman Gray, Public Service Co. of Indiana, Inc.; Donald Cox, Southern Indiana Gas & Electric Co.; William F. Cox, Mooresville Public Service Co.; Paul C. Greiner, Indiana & Michigan Electric Co., and Richard B. Humphrey, Northern Indiana Public Service.

Credit Picture

(*Continued from page* 123)

Companies reporting separate net losses from industrial customers showed $40,000 of losses in the December, 1954, period compared to $25,000 in the last report.

The ratio of net losses to sales increased to 20/100 of 1 per cent in the current report compared to 18/100 of 1 per cent in the June, 1954, report and 17/100 of 1 per cent in December, 1953.

The present picture is not a good one. There are some bright spots among the various companies' reports, but certainly the over-all trends are not encouraging. Efforts are being made by individual companies to combat the situation as evidenced by the greater emphasis given to deposit security and a general tightening up in collection policy. All geographical divisions, except one, report increases in the number and amount of customer deposits. Six companies reported changes in collection procedures, but in all six each had a greater number of service denials for nonpayment than last year.

From preliminary figures reported, the percentage increases in total net losses for gas and electric operations separately during the six months ending December, 1954, were consistent with the over-all 28.3 per cent increase shown for all companies, with electric operations showing a 28 per cent rise and gas operations a 31 per cent rise. A more detailed study, now in progress of trends from 1949 to 1954, shows gas losses per dollar of total revenue are consistently higher —nearly two to one—than for electric. A separate report of this latter study will be made by the Credit Picture Committee at the National Conference of Electric and Gas Utility Accountants to be held in April.

Personals

At the annual meeting of stockholders of Consolidated Gas Electric Light and Power Co. of Baltimore, **J. Pierre Bernard,** Annapolis, Md., was elected a Director to fill the vacancy created by the death of **William Schmidt, Jr., Charles P. Crane,** President, was given the additional position of Chairman of the Board and **Mason C. Albrittain,** General Sales Manager, was named Vice President and General Manager. The stockholders also approved a charter amendment changing the company's name to **Baltimore Gas and Electric Co.**

Mr. Bernard, President and Director of The Annapolis Banking and Trust Co., entered the financial field in 1929. In 1938, after several years in an executive capacity with the investment banking firm of Dick and Merle-Smith, he left to become a general partner in the investment firm of Charles Clark & Co. A graduate of the U. S. Naval Academy, Mr. Bernard retired from active naval service following World War II and became associated with the Annapolis bank where he has been president for the past three years.

Mr. Crane began his service with the Consolidated Co. in 1910 in a clerical capacity. He served as assistant to the late Charles M. Cohn and was elected vice president in 1938, executive vice president in 1946 and president in 1950. He is a director of the EEI.

Mr. Albrittain, a gradute of the University of Maryland, entered the company's employ in 1924 as a junior sales representative in the Industrial Power Department. In 1947 he was appointed assistant general manager of industrial and commercial sales and in 1949, general manager. In 1952 Mr. Albrittain was named general sales manager with direct responsibility for all of the company's sales and promotional activities. He is currently president of the Engineers Club of Baltimore.

Harold G. Haydon, Vice President and Treasurer, Potomac Electric Power Co., has retired after having served the company for 45 years. He joined PEPCO in 1910 as a clerk and became chief clerk in 1919. Ten years later he was made chief accountant and assumed the assistant comptrollership of the company in 1932. A year later he was elected comptroller, becoming vice president and comptroller in 1946 and vice president and treasurer in 1951.

Harry I. Miller, Manager of the Rates and Research Department, Wisconsin Public Service Corp., has been elected a Vice President. In addition to his present duties, he will act as coordinator of divisional operations.

Mr. Miller joined Public Service in 1923 at Menominee, Mich., as an assistant to the division manager and in 1928 was transferred to Oshkosh as rate engineer. In 1946 Mr. Miller was placed in charge of company-wide research as well as rates.

After graduation from the University of Wisconsin in 1921, he remained there as an instructor for two years. On leaves of absence during and following World War II, Mr. Miller served with the Office of Production Management, later known as the War Production Board. In 1947 his government duties took him to Japan to help solve the electric utility problems of that country, and in 1949 he was sent by the government to three European countries on electric supply and rate problems.

William W. Babcock has been elected a Vice President of Central Illinois Light Co. Mr. Babcock, who has been associated with the company for 23 years, was formerly Assistant to Vice President **Roy K. Dallas,** who was in charge of sales, public relations, and rates, and will succeed to these duties. Mr. Dallas will assume new duties as Vice President in Charge of Rate Research.

Mr. Babcock joined the company as efficiency engineer and his succeeding duties included assistant mechanical engineer. In 1940, he was named superintendent of power and occupied this position until transferred to his recently held responsibilities in 1951.

A graduate of Clarkson College, Mr. Babcock's previous service included employment with General Electric Co. and Ohio Edison Co.

At Long Island Lighting Co., **John J. Tuohy,** Assistant to the President, and **Howard B. Wakeman,** Assistant President in Charge of Customer Relations, have both been elected Vice Presidents of the company. Mr. Tuohy's new duties include responsibility for sales, promotion, advertising and publicity. Mr. Wakeman has assumed responsibility for commercial affairs and community relations.

Mr. Tuohy served for several years as an attorney on tax matters concerning the company and on related problems affecting land and land rights. He became assistant to former Long Island Lighting President Edward F. Barrett in 1950 and continued in that capacity when E. W. Doebler succeeded Mr. Barrett.

Mr. Wakeman started with the company as a clerk in the Bookkeeping Department in 1928 and, before assuming his previous position in 1950, served successively as supervisor of the collection of customer accounts, supervisor of customer accounts and customer correspondence, customer accounting manager and customer relations manager.

H. G. Kniese, Employee Relations Director at Central Illinois Light Co., has been made Assistant Vice President and will handle special assignments for the Administrative Vice President. Mr. Kniese has been succeeded as Employee Relations Director by **L. N. Talbott,** who has been Assistant Employee Relations Director since 1950.

Mr Kniese joined the company in 1909 as a draftsman, later becoming construction engineer. He took over the safety program in 1930 and assumed his previous position in 1940. Mr. Kniese has headed CILCO'S safety program for 25 of his 46 years of service, having started the company's accident prevention program in 1930. He helped organize the Central Illinois Chapter of the American Society of Safety Engineers.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

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H. S. SUTTON, *Treasurer*.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
A. B. MORGAN, *Secretary and Assistant Managing Director*..420 Lexington Avenue, New York, N. Y.

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(Terms Expiring 1955)

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N. R. SUTHERLAND.....Pacific Gas and Electric Co., San Francisco, Calif.
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ALLEN VAN WYCK.....Illinois Power Co., Decatur, Ill.

(Terms Expiring 1956)

D. E. ACKERS.....The Kansas Power and Light Co., Topeka, Kan.
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P. H. MCCANCE.....Duquesne Light Co., Pittsburgh, Pa.
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HARRY B. MUNSELL.....Kansas City Power & Light Co., Kansas City, Mo.
O. TITUS .....Pennsylvania Electric Co., Johnstown, Pa.
W. O. TURNER.....Louisiana Power & Light Co., New Orleans, La.
G. W. VAN DERZEE.....Wisconsin Electric Power Co., Milwaukee, Wis.
WILLIAM WEBSTER .....New England Electric System, Boston, Mass.
FRANK M. WILKES.....Southwestern Gas and Electric Co., Shreveport, La.

(Terms Expiring 1957)

R. P. BRIGGS.....Consumers Power Co., Jackson, Mich.
W. J. CLAPP.....Florida Power Corp., St. Petersburg, Fla.
J. E. CORETTE.....The Montana Power Co., Butte, Mont.
C. P. CRANE .....Baltimore Gas and Electric Co., Baltimore, Md.
A. S. CUMMINS.....The California Oregon Power Co., Medford, Ore.
THOMAS G. DIGNAN.....Boston Edison Co., Boston, Mass.
E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
JOHN W. EVERS.....Commonwealth Edison Co., Chicago, Ill.
C. E. IDE.....The Toledo Edison Co., Toledo, Ohio
S. R. KNAPP.....The Connecticut Light & Power Co., Berlin, Conn.
C. B. MCMANUS.....The Southern Co., Inc., Atlanta, Ga.
R. S. NELSON.....Gulf States Utilities Co., Beaumont, Texas
W. A. PARISH.....Houston Lighting & Power Co., Houston, Texas
HAROLD QUINTON .....Southern California Edison Co., Los Angeles, Calif.
L. V. SUTTON.....Carolina Power & Light Co., Raleigh, N. C.

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I. L. MOORE.....New England Electric System, Boston, Mass.
W. C. MULLENDORE....Southern California Edison Co., Los Angeles, Calif.
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KINSEY M. ROBINSON....The Washington Water Power Co., Spokane, Wash.
H. R. SEARING.....Consolidated Edison Co., of New York, Inc., New York, N. Y.
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FRANK M. TAIT.....The Dayton Power and Light Co., Dayton, Ohio
E. S. THOMPSON....The West Penn Electric Co. (Inc.), New York, N. Y.
J. R. WHITING....Consumers Power Co., Jackson, Mich.

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ACCOUNTING

Accounting Division Executive, O. K. BOYD.....Baltimore Gas and Electric Co., Baltimore, Md.
Coordinator of Customer Activities, F. J. PORTER, JR.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Customer Accounting, S. A. COLE.....New York State Electric & Gas Corp., Ithaca, N. Y.
Customer Collections, A. H. MAYER.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Customer Relations, T. J. PETERSON.....The Detroit Edison Co., Detroit, Mich.
Coordinator of General Activities, W. T. HAMILTON.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Depreciation Accounting, C. N. RICE, JR.....Northern States Power Co., Minneapolis, Minn.
General Accounting, C. T. DWIGHT.....The Hartford Electric Light Co., Hartford, Conn.
Internal Auditing, G. G. BECHER.....The Dayton Power and Light Co., Dayton, Ohio
Plant Accounting and Records, F. W. ROSS.....Pennsylvania Power & Light Co., Allentown, Pa.
Taxation Accounting, C. A. PALMGREN, JR.....New Orleans Public Service, Inc., New Orleans, La.

COMMERCIAL

Commercial Division Executive, O. R. DOERR.....Pacific Gas and Electric Co., San Francisco, Calif.
Commercial Sales Group, R. W. BUTTS.....Ohio Edison Co., Akron, Ohio
Farm Group, BUD S. MOSS.....Georgia Power Co., Atlanta, Ga.
Industrial Power and Heating Group, G. S. YOUNG.....Kansas City Power & Light Co., Kansas City, Mo.
Residential Group, H. H. BRENAN.....Pennsylvania Power & Light Co., Allentown, Pa.
Special Service Group, F. C. PESVEYC.....Public Service Electric and Gas Co., Newark, N. J.

ENGINEERING

Engineering Division General, E. L. HOUGH.....Union Electric Co. of Missouri, St. Louis, Mo.
Electrical Equipment, C. L. DERRICK.....The Hartford Electric Light Co., Hartford, Conn.
Hydraulic Power, P. M. HESS.....Pennsylvania Water & Power Co., Lancaster, Pa.
Meter and Service, C. V. MOREY.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Prime Movers, W. L. CHADWICK.....Southern California Edison Co., Los Angeles, Calif.
Transmission and Distribution, J. W. ANDERSON.....Philadelphia Electric Co., Philadelphia, Pa.

GENERAL

Accident Prevention, R. P. DOUGLAS.....The Detroit Edison Co., Detroit, Mich.
Area Development, W. I. DOLBEARE.....Virginia Electric and Power Co., Richmond, Va.
Atomic Power, EDGAR H. DIXON.....Middle South Utilities, Inc., New York, N. Y.
Codes and Standards, E. W. DOEBLER.....Long Island Lighting Co., Mineola, N. Y.
Electric Power Survey, ARTHUR S. GRISWOLD.....The Detroit Edison Co., Detroit, Mich.
Financing and Investor Relations, H. A. BUSCH.....General Public Utilities Corp., New York, N. Y.
Industrial Relations, F. R. RAUCH.....The Cincinnati Gas & Electric Co., Cincinnati, Ohio
Insurance, WALTER O. RANDLETT.....Virginia Electric and Power Co., Richmond, Va.
Legal, D. BRUCE MANSFIELD.....Ohio Edison Co., Akron, Ohio
Membership, E. S. THOMPSON.....The West Penn Electric Co. (Inc.), New York, N. Y.
Prize Awards, HARRY RESTOFSKI.....West Penn Power Co., Pittsburgh, Pa.
Purchasing and Stores, J. D. HOGG.....The Cleveland Electric Illuminating Co., Cleveland, Ohio
Rate Research, C. A. WILLIAMS.....The United Illuminating Co., New Haven, Conn.
Regulation, HARLLEE BRANCH, JR.....Georgia Power Co., Atlanta, Ga.
Research Advisory, R. E. MOODY.....Union Electric Co. of Missouri, St. Louis, Mo.
Research Projects, C. W. FRANKLIN.....Consolidated Edison Co. of New York, Inc., New York, N. Y.
Statistical, ROY F. CRIM.....West Penn Power Co., Pittsburgh, Pa.
Tax Policy, R. P. BRIGGS.....Consumers Power Co., Jackson, Mich.
Technical Exchange for Overseas Visitors, HARVEY E. BUMGARDNER.....The Detroit Edison Co., Detroit, Mich.
Transportation, RANDOLPH WHITFIELD.....Georgia Power Co., Atlanta, Ga.